SERVICE MANUAL

SANYO

PORTABLE STEREO RADIO CASSETTE RECORDER

M4500LU

141 861 03

SPECIFICATIONS

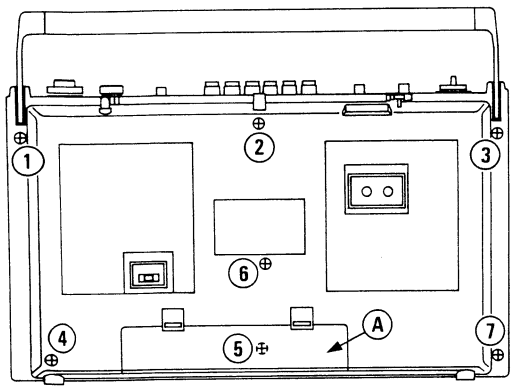
Power Source	
AC	115/230 V (50/60 Hz)
DC	9 V (UM-1, D Cell, HP 2, R 20)
Output Power	3.0 W x 2 (max.)
Power Consumption	15 W
Current Consumption (at VR min.)	
Recording mode	175 mA
Recording System	AC Bias
Erasing System	AC Erasing
Tape Speed	4.75 cm/sec. ±3%
Fast Forward Time	95 sec. (C-60 cassette)
Rewind Time	95 sec. (C-60 cassette)
Wow & Flutter	0.24% WRMS
Frequency Response	
CHROME	60 – 12,000 Hz
NORMAL	60 – 10,000 Hz
Signal to Noise Ratio	Better than 45dB
Hum & Noise	Less than –52dBs
Crosstalk	
Track to Track	Better than 70dB
Channel Separation	Better than 50dB
Terminal Impedance	
MIC	2.2 k-ohm
PHONO	47 k-ohm
DIN INPUT	12 k-ohm
DIN OUTPUT	5.6 k-ohm
Ext. Speaker	4 ohm
Headphone	4 – 16 ohm
Frequency Range	
LW	150 – 350 kHz
MW	525 – 1605 kHz
SW	6 – 18 MHz
FM	87.5 – 108 MHz

–Specifications subject to change without notice.–

DISASSEMBLY INSTRUCTIONS

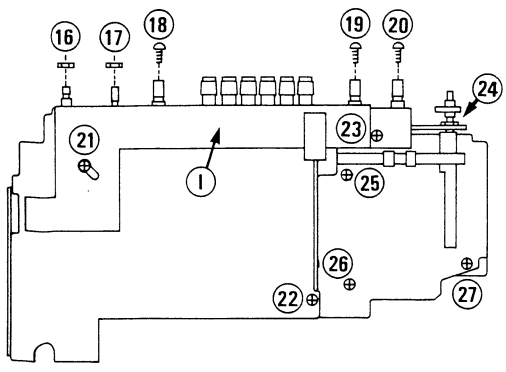
CABINET BOTTOM REMOVAL

1. Pull out the power cord from the unit and open the cassette compartment lid by pressing the Stop/Eject button. Then, take out the cassette tape from the compartment and close the lid.
2. Turn over the unit on a soft surface and remove the battery compartment lid (A). Then, take out the six batteries.
3. Unscrew the seven screws (1–7) fastening the Cabinet Bottom and remove the Cabinet Bottom by carefully lifting it from the unit.
4. Pull out the three FM antenna connectors from the Radio Tuner P.C.Board.
5. When completely removing the Cabinet Bottom from the unit, unsolder the two lead wires (black and red) from the Power Supply P.C.Board.
6. Reassemble in the reverse order.



CABINET CHASSIS REMOVAL

1. Follow the instructions for the Cabinet Bottom Removal.
2. Pull out the Fine Tuning Knob (B), Tuning Knob (C), Volume Control Knob for the right channel (D), Volume Control Knob for the left channel (E), Washer (F), Tone Control Knob (G), and Band Select Knob (H) from the unit.
3. Unscrew the eight red screws (8–15) fastening the Cabinet Chassis and pull out the three connectors connecting the right channel Built-in Microphone and the two connectors connecting the right channel Speaker.
4. To remove the Cabinet Chassis, carefully lift the lower side of the Amplifier P.C.Board.
5. Reassemble in the reverse order.



AMPLIFIER P.C.B. ASSEMBLY REMOVAL

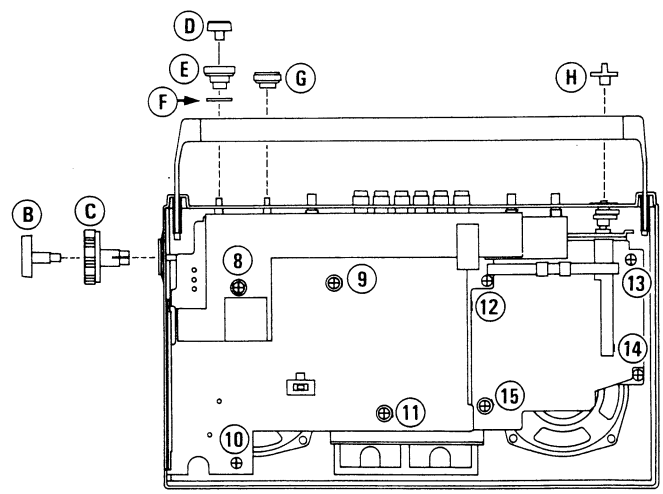
1. Follow the instructions for both removals of the Cabinet Bottom and the Cabinet Chassis.
2. Remove the two nuts (16 and 17) holding the Volume Controls and Tone Control, and unscrew the three screws (18–20) fastening the Function Switch, Tape Select Switch, and Mode Select Switch.
3. Unscrew the two screws (21 and 22) fastening the Amplifier P.C.Board and remove the Shield Leaf (I). Then, unscrew a screw (23) fastening the Switch P.C.Board.
4. Remove the Amplifier P.C.Board with the Switch P.C.Board by carefully lifting its jack plate side.
5. Reassemble in the reverse order.

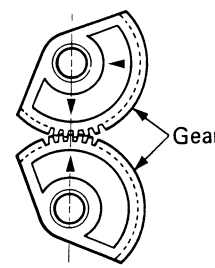
RADIO TUNER P.C.BOARD ASSEMBLY REMOVAL

1. Turn the Tuning Knob fully counter-clockwise.
2. Follow the instructions for both removals of the Cabinet Bottom and the Cabinet Chassis.
3. Loosen a nut (24) fastening the Radio Tuner P.C.Board.
4. Remove the Radio Tuner P.C.Board by lifting it from the Cabinet Chassis.

NOTE:

A. Do not turn the Tuning Knob before the Radio Tuner P.C.Board is re-mounted to the Cabinet Chassis.
B. After mounting the P.C.Board, check to see that the Pointer is positioned to "0".
C. When mounting the P.C.Board to the Cabinet Chassis, mesh the Gears of the Band Selector matching the marks on each Gear as illustrated.

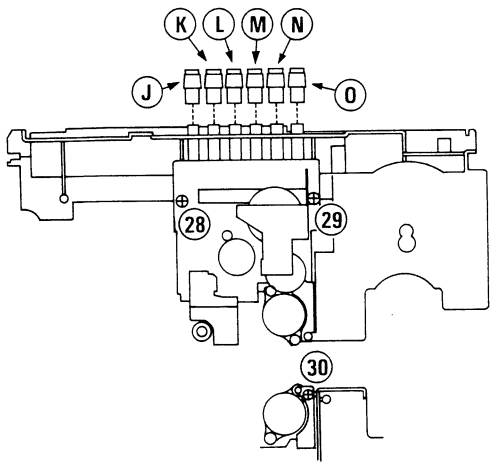




DISASSEMBLY INSTRUCTIONS (Continued)

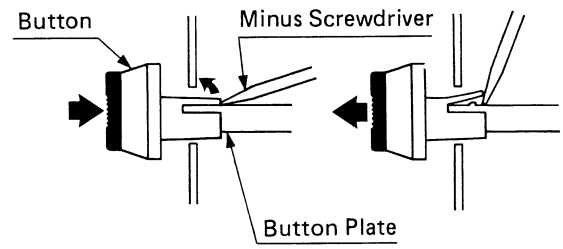
CHASSIS ASSEMBLY REMOVAL

1. Follow the instructions for the Amplifier P.C.Board Assembly Removal.
2. Carefully pull out the six buttons (J–O) from the unit without damaging them by following the Select Button Removal.
3. Unscrew the two screws (28 and 29) fastening the Chassis and turn the Cabinet Chassis over.
4. Unscrew a screw (30) fastening the Chassis and remove the Chassis from the Cabinet Chassis.
5. Reassemble in the reverse order.



SELECT BUTTON REMOVAL

1. While keeping the Button pressed down, insert a small minus screwdriver into the clearance between the Button and the Button Plate. Then, lift the Select Button with the screwdriver without damaging it as illustrated.
2. Pull out the Button from the Button Plate. If the Button is damaged, replace it with a new one.



CASSETTE COMPARTMENT LID REMOVAL

1. Open the cassette compartment lid by pressing the Stop/Eject button.
2. To remove the cassette compartment lid, unlock the protruded sections on both sides of the cassette compartment lid from the Cabinet Top by pressing the both sides strong with care.
3. Reassemble in the reverse order.

MECHANICAL ADJUSTMENTS

REQUIRED EQUIPMENTS

- Spring Gauge . . . . . 500g maximum
- Cassette-type Torque Meter . . . . . 100g-cm maximum
- Thickness Gauge
- Silicone Grease . . Example: SHIN-ETSU SILICONE KS-64
- Paint or Glue

GENERAL REMARKS

- Before adjusting the mechanism of the unit, clean the tape contacting surfaces with a soft cloth soaked in alcohol. Trouble may occur because of oil and grease stains.

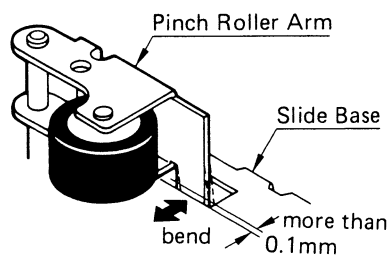
- The belts must be kept clean while the adjustments are performed.
  * Silicone grease (Example: SHIN-ETSU SILICONE KS-64) is applied to the Drive Belt and the Take-up Belt to protect them from abrasion. If the grease lacks, apply a proper amount of silicone grease (Example: SHIN-ETSU SILICONE KS-64) to each groove of the Flywheel and Friction Assembly.

  NOTE:
  Silicone grease is not applied to the Replacement Parts.

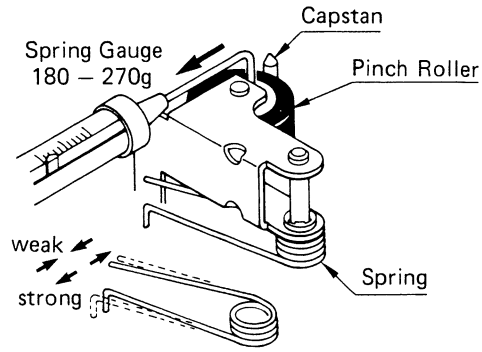
- **Never apply grease or oil to the ASO Belt. If applied, wipe it clean with benzine.**

PINCH ROLLER ADJUSTMENT

1. Set the unit in the playback mode and check to see that the clearance between the Pinch Roller Arm and the Slide Base is more than 0.1mm and that the Take-up Reel Gear rotates before the Pinch Roller starts rotating as the PLAY button gradually pressed.
   * If necessary, adjust the clearance by carefully bending the Pinch Roller Arm as illustrated. Do not excessively bend it.



2. Measure the pinch roller pressure with a spring gauge (500g) with the unit in the playback mode as follows:
   * Hook the spring gauge to the Pinch Roller as illustrated and pull it away from the Capstan. Then, slowly bring the Pinch Roller close to the Capstan.
   * Measure the pressure the moment the Pinch Roller comes in contact with the Capstan and starts rotating. It should be 180 – 270g.
   * If necessary, change the pressure by bending the Spring or replace the Spring with a new one.

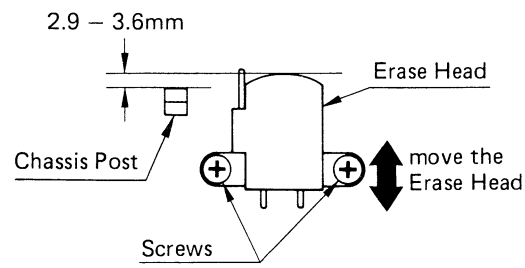


3. Check the Pinch Roller. If it has a defective rubber surface, replace the Pinch Roller with a new one.

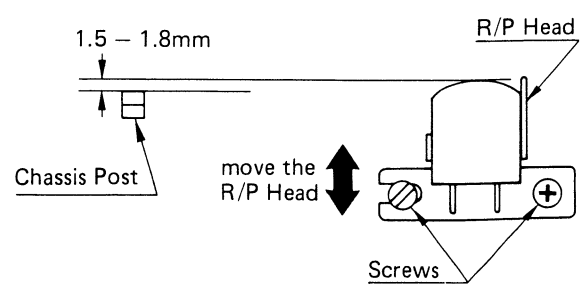
HEAD POSITION ADJUSTMENT

After a head has been removed or replaced, adjust the head positon by the following procedures.

1. The distance between the Erase Head and the chassis posts should be 2.9 – 3.6mm with the unit in the playback mode.
   * If necessary, loosen the screws fastening the Erase Head and move the head as illustrated.



2. With the REWIND or F.F. button pressed down in the playback mode, the distance between the R/P Head and the Chassis posts should be 1.5 – 1.8mm.
   * If necessary, loosen the screws fastening the R/P Head and adjust the head position.



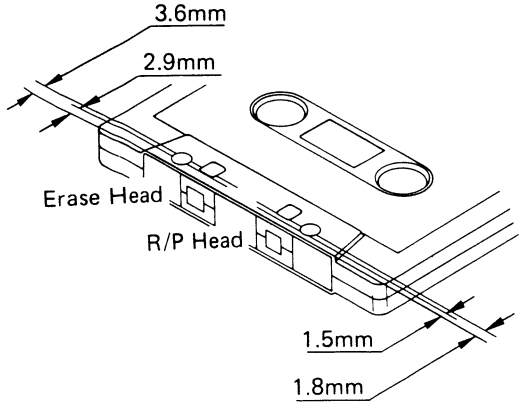
3. After the adjustment, tighten the screw and secure it with paint or glue.

MECHANICAL ADJUSTMENTS (Continued)

NOTE:

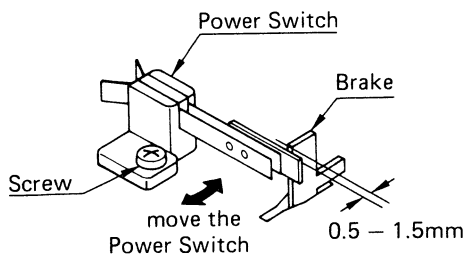
A. Apply paint or glue to the azimuth adjusting screw only after the azimuth adjustment.

B. A cassette with the specified pin-head distances marked on it as shown can be used as a facilitating gauge for the Head Position Adjustment. (Do not use a worn cassette.)



POWER SWITCH POSITION ADJUSTMENT

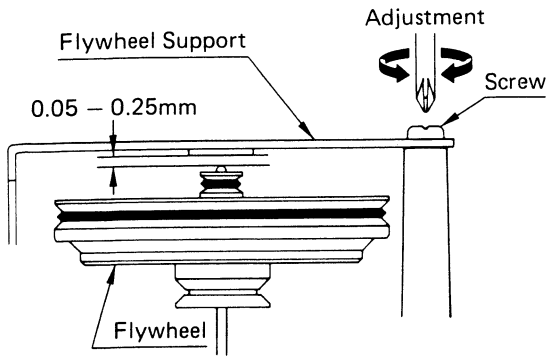
1. Set the unit in the stop mode and check to see that the clearance between the Power Switch and the Brake is 0.5 – 1.5mm as illustrated.



2. If necessary, loosen the screw fastening the Power Switch and shift the Switch to the specified position.
3. After the adjustment, tighten the screw and secure it with paint or glue.

FLYWHEEL SUPPORT ADJUSTMENT

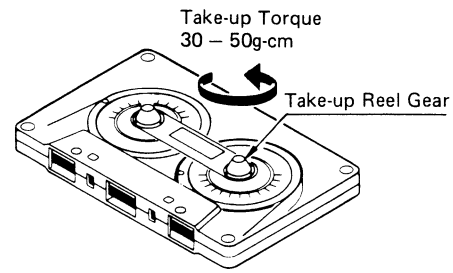
1. Turn over the unit and check to see that the clearance between the Flywheel Support and the Flywheel is 0.05 – 0.25mm as illustrated.



2. If necessary, adjust the clearance by tightening the screw fastening the Flywheel Support.
3. After the adjustment, secure the screw with bonding material.

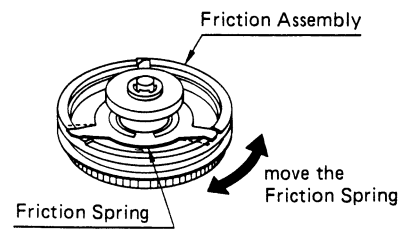
TAKE-UP TORQUE ADJUSTMENT

1. Insert the cassette-type torque meter into the unit and measure the torque of the Take-up Reel Gear with the unit in the playback mode.
   The take-up torque should be 30 – 50g-cm.



Cassette Type Torque Meter

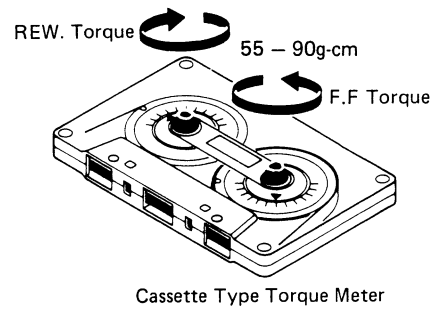
2. If necessary, adjust the torque by moving the Friction Spring of the Friction Assembly as illustrated.



NOTE:
If the Take-up Reel Gear and the Take-up Gear run idle and produce an abnormal sound, adjust the take-up torque as low as possible.

FAST FORWARD & REWIND TORQUE

1. The fast forward and rewind torque value measured by cassette-type torque meter should be 55 – 90g-cm.



Cassette Type Torque Meter

NOTE:
Read the torque values on the torque meter just before the unit automatically shuts off.

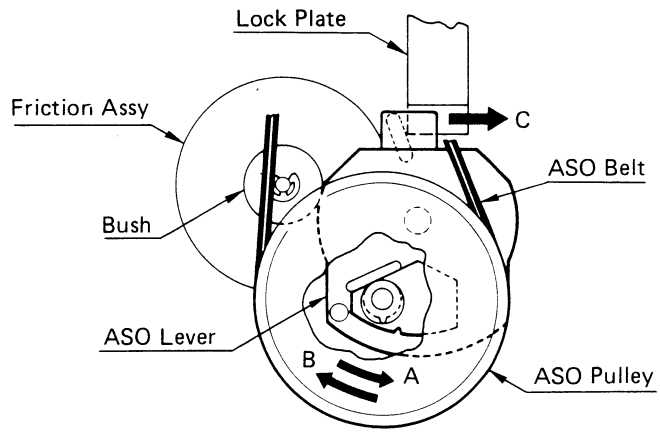
2. If the torque value is more than 90g-cm, apply a proper amount of silicone grease (Example: SHIN-ETSU SILICONE KS-64) to the groove of the Friction Assembly.
3. If the torque value is less than 55g-cm, replace the Take-up Belt with a new one.

MECHANICAL ADJUSTMENTS (Continued)

AUTO SHUT-OFF MECHANISM

FUNCTION

- Silicone grease (Example: SHIN-ETSU SILICONE KS-64) is applied to the contacting surfaces of the Bush and the ASO Lever, and the tooth of the ASO Lever to make the mechanism function smoothly.
  If the grease lacks, apply a proper amount of silicone grease to them.
- The ASO Lever is ordinarily pressed by the spring and contacts the Bush of the Friction assembly. It moves in the direction of arrow A in accordance with the bush rotation.
- The shaft of the ASO Pulley is elliptical in shape like a cam as illustrated, so that it moves the ASO Lever in the direction of arrow B according to the rotation of the ASO Pulley.
4. Each tooth of the ASO Pulley and the ASO Lever does not mesh each other and shaft of the ASO Pulley moves the ASO Lever back and forth in the above described directions (A and B).
5. When the tape is completely wound to the end, the Bush rotation stops, so that the ASO Lever is moved in the direction of arrow B by the ASO Pulley and it stops moving.
6. The ASO Pulley continues rotating, so that its tooth is engaged with the tooth of the ASO Lever and it pulls the ASO Lever in the direction of arrow C.
7. The ASO Lever pushes the Lock Plate to make the unit in the stop mode.



If the Auto Shut-off Mechanism has a trouble, repair it referring to the following troubleshooting.

SYMPTOM	POSSIBLE CAUSE		REMEDY
ASO mechanism does not work properly.	ASO spring is unhooked.		Repair.
	Grease is not applied enough to the circumference of the bush or is not applied at all.		Apply grease.
	ASO Lever does not move properly.	Shaft of ASO Lever is clogged by grease or dusts.	Remove grease or dusts by wiping Shaft with alcohol.
ASO mechanism does not work at all.	ASO Lever is in contact with Take-up Pulley of Friction Assembly.		Insert the washer below the E ring of the bush and keep the clearance between the E ring and the bush less than 0.5mm.
	ASO belt is worn out.		Replace.
	ASO belt is stained.		Wipe ASO belt with benzine.

NOTE:
Although there is a case that the button is not locked by pressing one of the Select Buttons (PLAY, FF, REW) without power supplied to the unit after the unit has automatically shut off, this symptom is not a trouble.

ELECTRICAL ADJUSTMENTS

REQUIRED EQUIPMENTS

- VTVM
- Frequency Counter
- Dummy Load (470 k-ohm)
- Audio Signal Generator (output=1 kHz 1V, 0 dB)
- Attenuator
- Test Tapes
  - * 3 kHz test tape for Tape Speed Adjustment (TEAC MTT-111)
  - * 10 kHz test tape for Head Azimuth Adjustment (TEAC MTT-114)
  - * 333 Hz test tape for Playback Output Level Adjustment (TEAC MTT-112)
  - * 1 kHz test tape for Meter Adjustment (TEAC MTT-118)
  - * Bulk-erased Tape for recording & playback operations (Colombia 1H)
- Alignment Tool

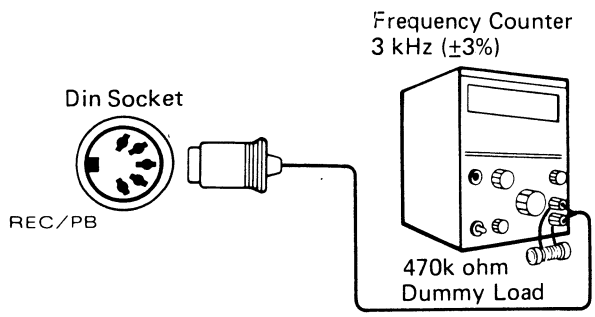
NOTE:

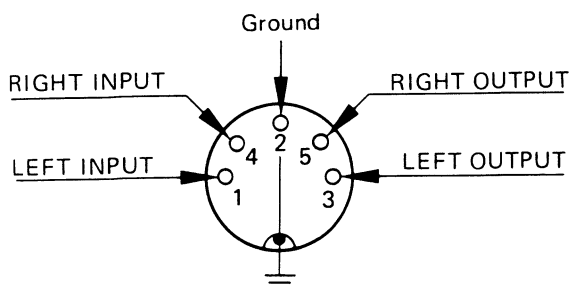
A. Prior to the Electrical Adjustments, set the Switches as follows:
   - * Mode Switch . . . . . STEREO
   - * Tape Select Switch . . . . . .NORMAL
   - * Function Switch. . . . . .TAPE

B. The Electrical Adjustments should be performed in the order as described below.

TAPE SPEED ADJUSTMENT

1. Remove the Radio Chassis by following the instructions for it.
2. Connect a frequency counter to the left or right channel output terminals of DIN socket as illustrated and play back a 3 kHz test tape (Example: TEAC MTT-111).

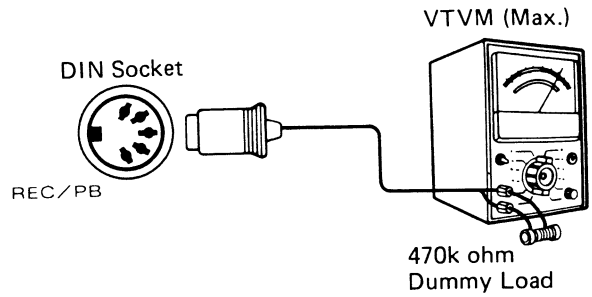




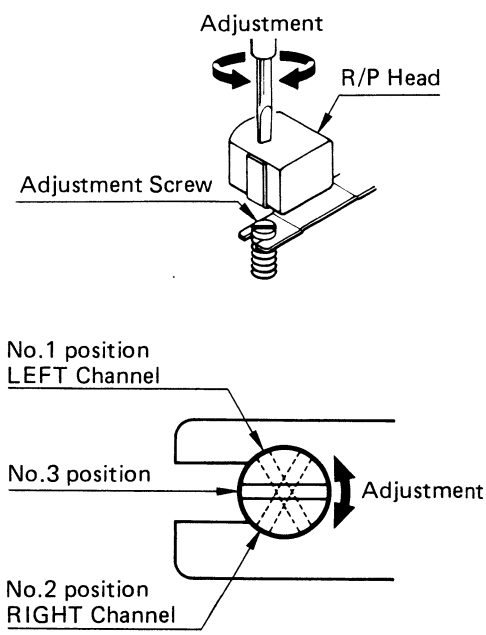
3. Adjust the tape speed by turning the potentiometer inside the Motor until the counter reading becomes 3 kHz (±3%).

R/P HEAD AZIMUTH ADJUSTMENT

1. Remove the cassette compartment lid by following the instructions for it.
2. Connect a VTVM to the left channel and right channel output terminals of DIN socket as illustrated and play back a 10 kHz test tape (Example: TEAC MTT-114).



3. Turn the azimuth adjusting screw until the left channel on the VTVM becomes the maximum. (No. 1 position)
4. Then, turn the azimuth adjusting screw again until the right channel output on the VTVM becomes the maximum. (No. 2 position)
5. Turn the adjusting screw to the center of the No. 1 and No. 2 positions as illustrated. (No. 3 position)



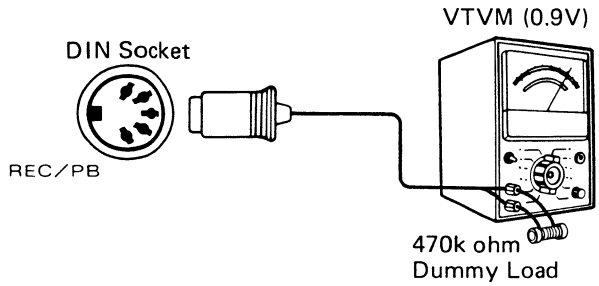
6. Repeat the above described adjustment several times and adjust the azimuth correctly.
7. After the adjustment, secure the adjusting screw with paint or glue.

ELECTRICAL ADJUSTMENTS (Continued)

'LAYBACK OUTPUT LEVEL ADJUSTMENT

LEFT CHANNEL

. Connect a VTVM to the left channel output terminal of DIN socket as illustrated and play back a 333 Hz (0 dB) test tape (Example: TEAC MTT-112).



2. While the test tape is being played back, adjust the potentiometer (P101) until the playback output level becomes 0.9V on the VTVM.

RIGHT CHANNEL

By following the same procedure as for the left channel, adjust the playback output level with the potentiometer (P201).

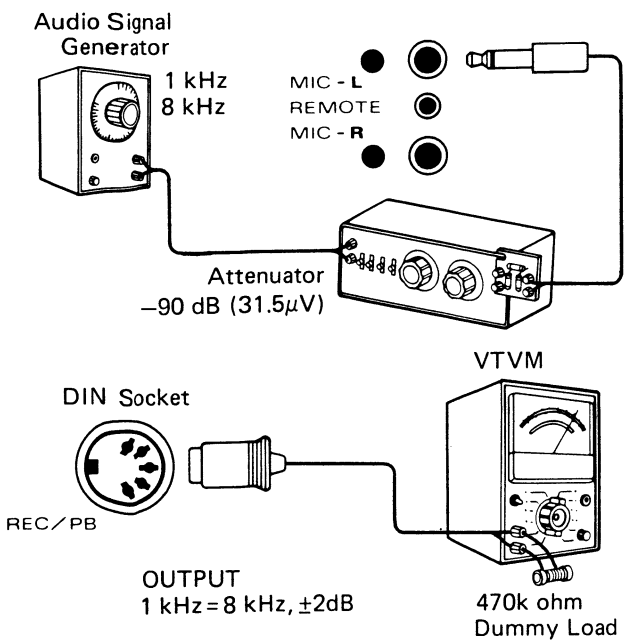
VU METER ADJUSTMENT

1. Insert a 1 kHz (—10 dB) test tape (Example: TEAC MTT-118) into the unit and play it back.
2. While the test tape is being played back, adjust the potentiometer (P104) until the Pointer of the left channel Meter indicates the identical position as the Pointer of the right channel Meter.

RECORDING & PLAYBACK FREQUENCY RESPONSE ADJUSTMENT

LEFT CHANNEL

1. Connect an audio signal generator and an attenuator to the left channel microphone jack and a VTVM to the left channel output terminals of DIN socket as illustrated.



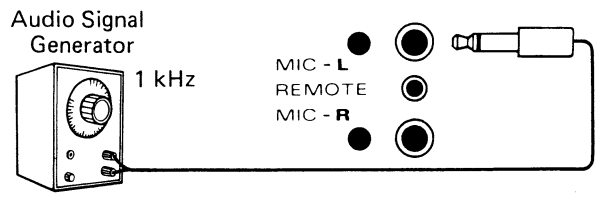
2. Insert a bulk-erased tape (Example: Colombia 1H) into the cassette compartment and alternately record 1 kHz and 8 kHz signals from the audio signal generator at —90 dB (31.5μV) on the tape several times.
3. While the recorded signal is being played back, check that the 8 kHz signal output is identical to the 1 kHz signal output or the deviation is ±2 dB on the VTVM.
4. If not, adjust the potentiometer (P103) and re-check the output again after the recording and playback operations for the signal.
5. Repeat the above adjustment until the specified output is obtained.

RIGHT CHANNEL

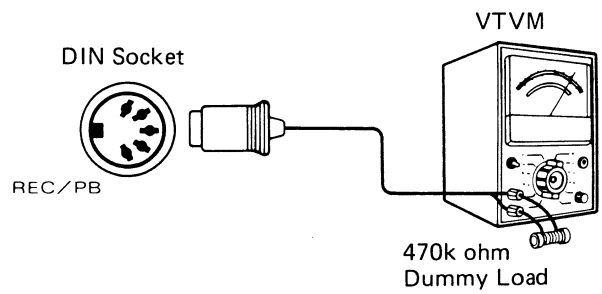
By following the same procedure as for the left channel, adjust the potentiometer (P203) for the right channel.

RECORDING & PLAYBACK OUTPUT LEVEL ADJUSTMENT

1. Connect an audio signal generator to the left channel microphone jack, and a VTVM to the left channel output terminals of DIN socket as illustrated.



—70 dB (315μV)

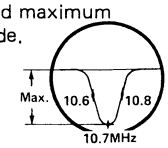
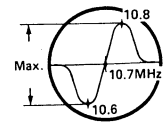
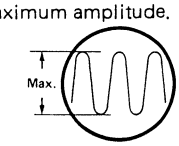
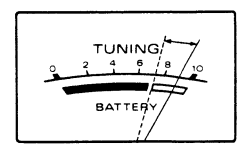


2. Insert a bulk-erased tape (Example: Colombia 1H) into the cassette compartment and record 1 kHz signal from the audio signal generator at —70 dB (315μV) on the tape.
3. Play back the recorded signal and bear the signal output on theVTVM in mind.
4. By following the same procedure, perform the recording and playback operations for the right channel signal.
5. Check that the right channel output is identical to the left channel output or the deviation is ±2 dB on the VTVM.
6. If not, adjust the potentiometer (P202) and re-check the right channel output again after the recording and playback operations for the signal.
7. Repeat the above adjustment until the specified output is obtained.

TUNER ADJUSTMENT

FM ALIGNMENT

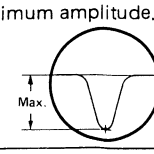
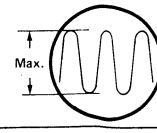
Standard test frequency 400 Hz and deviation 22.5 kHz

Step	Alignment	Connections		Frequency of Signal Generator	Tuning Dial Setting	Adjustment	Remarks
		INPUT	OUTPUT				
1	Calibration of IF	Place output of gene-scope on Trap Coil (L2).	Connect input terminal of gene-scope to detector output.	10.7 MHz	Low End	Turn T3 (blue core) fully counter-clockwise. T1 and T2	Obtain symmetrical curve and maximum amplitude. 
2						T3 (blue core)	Obtain S curve and maximum amplitude. 
3	Calibration of Tuning Range	Connect signal generator to antenna terminal through dummy antenna.	Connect VTVM with 4 ohm dummy load and oscilloscope to Ext. speaker terminal.	87.2 MHz		L3	Obtain sine-curve and maximum amplitude. 
4				109 MHz	High End	PVC TC2	
5	Adjustment of Tracking			90 MHz	90 MHz	L1	
6				106 MHz	106 MHz	PVC TC1	
7	Adjustment of Tuning Meter			98 MHz	98 MHz	P1	Set output level of signal generator to −60 dB. Adjust P1 until needle of meter swings in the range as illustrated. 
8	Repeat the above adjustments.						

* **Use a screwdriver with plastic grip for all adjustments.**

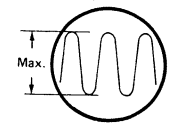
MW ALIGNMENT

Standard Test Frequency 400 kHz and Modulation 30% at AM

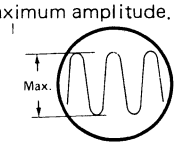
Step	Alignment	Connections		Frequency of Signal Generator	Tuning Dial Setting	Adjustment	Remarks
		INPUT	OUTPUT				
1	Calibration of IF for AM	Connect standard loop antenna to output terminal of gene-scope. Place bar antenna 60 cm away from loop antenna.	Connect input terminal of gene-scope to detector output.	460 kHz	Low End	T8, T9, and T10	Obtain symmetrical curve and maximum amplitude. 
2	Calibration of Tuning Range	Connect standard loop antenna to output of signal generator. Place bar antenna 60 cm away from loop antenna.	Connect VTVM with 4 ohm dummy load and oscilloscope to Ext. speaker terminal.	505 kHz		T6	Obtain sine-wave of 400 Hz and maximum amplitude. 
3				1670 kHz	High End	TC4	
4	Adjustment of Tracking			600 kHz	600 kHz	L5-1 (MW bar ant. coil)	
5				1400 kHz	1400 kHz	PVC TC3	
6	Repeat the above adjustments.						

TUNER ADJUSTMENT (Continued)

.W ALIGNMENT

Step	Alignment	Connections		Frequency of Signal Generator	Tuning Dial Setting	Adjustment	Remarks
		INPUT	OUTPUT				
1	Calibration of Tuning Range	Connect standard loop antenna to output of signal generator. Place bar antenna 60 cm away from loop antenna.	Connect VTVM with 4 ohm dummy load and oscilloscope to Ext. speaker terminal.	145 kHz	Low End	T7	Obtain sine-wave of 400 Hz and maximum amplitude. 
2				365 kHz	High End	TC5	
3	Adjustment of Tracking			170 kHz	170 kHz	L5-2 (LW bar ant. coil)	
4				310 kHz	310 kHz	TC2	
5	Repeat the above adjustments.						

SW ALIGNMENT

Step	Alignment	Connections		Frequency of Signal Generator	Tuning Dial Setting	Adjustment	Remarks
		INPUT	OUTPUT				
1	Calibration of Tuning Range	Connect signal generator to antenna terminal through dummy antenna.	Connect VTVM with 4 ohm dummy load and oscilloscope to Ext. speaker terminal.	5.7 MHz	Low End	T5	Obtain sine-wave of 400 Hz and maximum amplitude. 
2				18.7 MHz	High End	TC3	
3	Adjustment of Tracking			6.5 MHz	6.5 MHz	T4	
4				17 MHz	17 MHz	TC1	
5	Repeat the above adjustments.						

* **Use a screwdriver with plastic grip for all adjustments.**

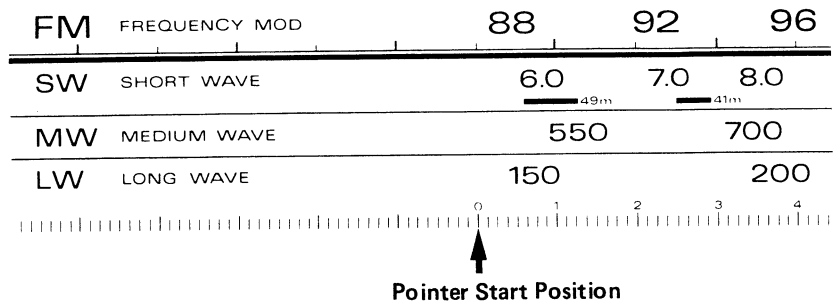
FM MPX ALIGNMENT

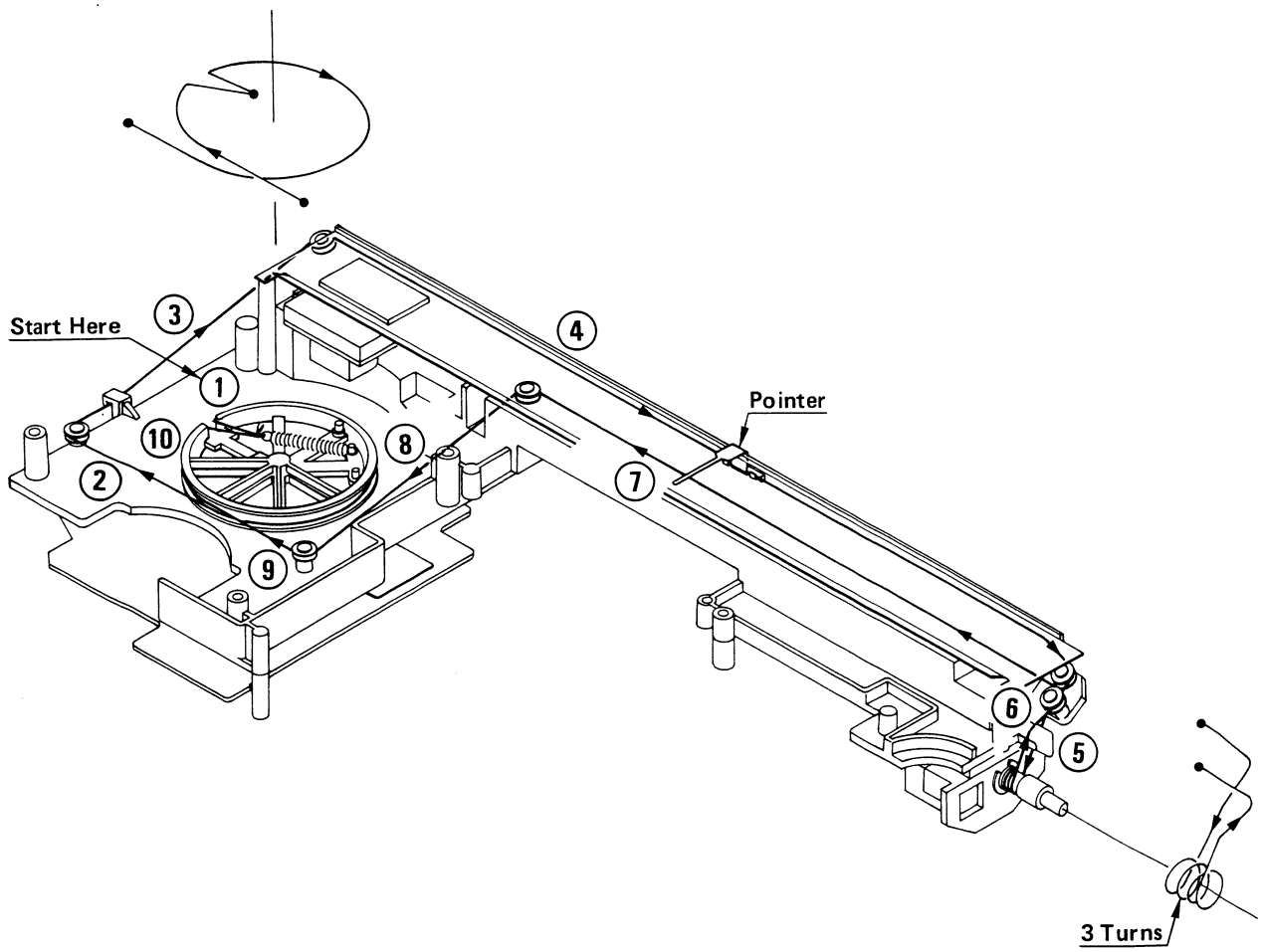
Standard test frequency 400 Hz and deviation 75 kHz

Step	Alignment	Connections		Tuning Dial Setting	Adjustment	Remarks
		INPUT	OUTPUT			
1	PLL IC FO (19 kHz) Adjustment	None	Connect frequency counter or synchro-scope to No. 12 pin of IC (LA 3350).	98 MHz	P2	Obtain 19 kHz on the frequency counter or synchro-scope.
2	FM Stereo Signal Separation	Connect Stereo SG to antenna terminal.	Connect VTVM with 4 ohm dummy load, distortion meter, and oscilloscope to R channel Ext. speaker terminal.			
3		Main channel signal of Stereo SG —— ON			Tuning Dial	Maximize amplitude and VTVM reading.
4		Pilot (19 kHz) and Sub channel signals of Stereo SG —— ON				Minimize distortion meter reading with maximum amplitude.
5		L channel and Pilot (19 kHz) signals of Stereo SG —— ON			P3	Minimize amplitude and VTVM reading.
6		Main channel signal of Stereo SG —— ON	Connect VTVM with 4 ohm dummy load, distortion meter, and oscilloscope to L channel Ext. speaker terminal.		Tuning Dial	Maximize amplitude and VTVM reading.
7		Pilot (19 kHz) and Sub channel signals of Stereo SG —— ON				Minimize distortion meter reading with maximum amplitude.
8		R channel and Pilot (19 kHz) signals of Stereo SG —— ON			P3	Minimize amplitude and VTVM reading.
9	Repeat the above adjustments.					

* **Use a screwdriver with plastic grip for all adjustments.**

DIAL CORD STRINGING





PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	PACKAGE		
	141 6 1419 36102	Individual Carton	1
	141 6 1449 52000	Styrofoam Case, Right	1
	141 6 1449 52100	Styrofoam Case, Left	1
	141 6 2519 09790	Poly Cover	1
	141 6 2519 25035	Poly Cover	1
	141 6 3119 17300	Pad	1
	141 6 4559 00100	Serial No. Sheet	2
	ACCESSORIES		
	4 2419 71983	Cassette	1
	4 2439 70310	Power Cord	1
	141 2 3529 10600	Cassette Stopper	1
	141 6 2519 05790	Poly Pouch	1
	141 6 4119 79600	Instruction Manual	1
	141 6 4729 07400	Caution Label	1
	141 6 4729 16700	Caution Label	1
	CABINET		
SP1	4 1519 70710	Speaker (4 ohm)	1
SP2	4 1519 70710	Speaker (4 ohm)	1
SP3	4 1519 70562	Speaker (4 ohm)	1
SP4	4 1519 70562	Speaker (4 ohm)	1
S11	4 2319 72140	Slide Switch (Voltage Selector)	1
	4 1539 70551	Microphone	2
S12	4 2319 70770	Slide Switch (Antenna)	1
	4 2359 70980	Connector	1
	4 2359 70990	RT Pin Socket	1
	4 2369 72540	Antenna Plug	1
	4 2449 70240	Rod Antenna	1
T301	4 2519 72081	Power Transformer	1
ME1	4 5119 70480	Indicator Assy (VU Meter)	1
ME2	4 5119 70480	Indicator Assy (VU Meter)	1
	141 0 1119 50102	Cabinet Top Complete	1
	141 0 1119 50203	Cabinet Bottom Assy	1
	141 0 1249 11701	Cassette Lid Assy	1
	141 0 1719 07000	Handle Assy	1
	141 2 1339 17500	Battery Lid	1
	141 2 2149 09500	Battery Ribbon	1
	141 2 2449 26700	Microphone Screen	2
	141 2 3739 03600	Meter Bracket	1
	141 2 3829 06700	Battery Terminal, Anode	1
	141 2 3829 20800	Spring, Battery	1
	141 2 3829 22400	Spring, Battery	1
	141 2 3849 03600	Antenna Terminal Base	1
	141 2 3899 08800	Earth Terminal	2
	141 2 4219 15000	Screw	2
	141 2 4219 15200	Screw	5
	141 2 4219 15600	Screw	8
	141 2 4469 22200	Cushion	1
	141 2 4469 26200	Cushion	1
	141 2 4539 16600	Washer	1
	141 2 4569 05100	Ring	1
	141 2 4729 03001	Lug	1
	141 2 8539 23200	Spring, Cassette Lid	1
	141 6 4729 18000	Fuse Label	1
R54		Carbon 100 ohm 1/4W ±5%	1
R55		Carbon 10k ohm 1/4W ±5%	1
C135		Non-polar 4.7MF 10V	1
C235		Non-polar 4.7MF 10V	1
		Screw, Pan Hd. +M2.0x5	2
		Screw, Pan Hd. +M2.0x6	2
		Screw, Pan Hd. +M3.0x8	2
		Screw, Pan Hd. Tapping-2 +M3.0x8	6
		Screw, Pan Hd. Tapping-2 +M3.0x10	3
		Screw, Pan Hd. Tapping-2 +M3.0x12	1
		Screw, Pan Hd. Tapping-2 +M3.0x14	2
		Screw, Pan Hd. Tapping-2 +M3.0x14	2
		Nut-1 M3.0	2
		Tooth Outer Washer-B M3.0	1
	141 2 1639 22700	Band Select Knob	1

Ref. No.	Part No.	Description	Q'ty
	CABINET		
	141 2 1639 24201	Volume Top Knob	1
	141 2 1639 24301	Volume Bottom Knob	1
	141 2 1639 25500	Mode Knob	1
	141 2 1639 28201	Tuning Knob	1
	141 2 1639 28301	Fine Tuning Knob	1
	141 2 4539 16000	Washer	1
	141 2 6219 02301	Switch Lever Knob	3
	RADIO TUNER P.C.B. ASSY		
	4 1259 71170	Radio Tuner P.C.B. Assy	1
FB1	4 2539 70210	Bead Ferrite	1
BPF1	4 2539 70480	Band Pass Filter	1
CF1	4 2539 70470	Ceramic Filter	1
C1		Ceramic 0.022MF 50V +80, −20%	1
C2		Ceramic 0.01MF 50V ±10%	1
C3		Ceramic 18PF 50V ±5%	1
C4		Ceramic 3PF 50V ±0.2PF	1
C5		Ceramic 2PF 50V ±0.2PF	1
C6		Ceramic 100PF 50V ±10%	1
C7		Ceramic 0.022MF 50V +80, −20%	1
C8		Ceramic 0.022MF 50V +80, −20%	1
C9		Ceramic 12PF 50V ±5%	1
C10		Ceramic 15PF 50V ±5%	1
C11		Ceramic 15PF 50V ±5%	1
C12		Ceramic 10PF 50V ±5%	1
C13		Ceramic 0.01MF 50V ±10%	1
C14		Ceramic 0.022MF 50V +80, −20%	1
C15		Ceramic 6PF 50V ±0.2PF	1
C16		Ceramic 0.022MF 50V +80, −20%	1
C17		Ceramic 0.01MF 50V +80, −20%	1
C18		Ceramic 0.022MF 50V ±10%	1
C19		Ceramic 0.022MF 50V ±10%	1
C20		Ceramic 0.022MF 50V +80, −20%	1
C21		Ceramic 22PF 50V ±5%	1
C22		Electrolytic 10MF 10V	1
C23		Ceramic 0.022MF 50V +80, −20%	1
C24		Ceramic 220PF 50V ±10%	1
C25		Ceramic 220PF 50V ±10%	1
C26		Electrolytic 4.7MF 10V	1
C27		Non-polar 0.47MF 10V	1
C28		Ceramic 0.022MF 50V +80, −20%	1
C29		Electrolytic 4.7MF 10V	1
C30		Ceramic 15PF 50V ±5%	1
C31		Ceramic 7PF 50V ±0.2PF	1
C32		Ceramic 22PF 50V ±5%	1
C33		Ceramic 10PF 50V ±5%	1
C34		Polystyrol 3100PF 50V ±5%	1
C35		Polystyrol 360PF 50V ±5%	1
C36		Polystyrol 200PF 50V ±5%	1
C37		Ceramic 7PF 50V ±0.5PF	1
C38		Ceramic 15PF 50V ±5%	1
C39		Ceramic 100PF 50V ±5%	1
C40		Ceramic 0.022MF 50V +80, −20%	1
C41		Ceramic 0.022MF 50V +80, −20%	1
C42		Ceramic 0.022MF 50V +80, −20%	1
C43		Ceramic 0.01MF 50V +80, −20%	1
C44		Electrolytic 10MF 10V	1
C45		Ceramic 0.022MF 50V +80, −20%	1
C46		Electrolytic 22MF 10V	1
C47		Ceramic 390PF 50V ±10%	1
C48		Mylar 0.01MF 50V ±10%	1
C49		Ceramic 0.022MF 50V +80, −20%	1
C50		Electrolytic 22MF 10V	1
C51		Mylar 0.01MF 50V ±10%	1
C52		Aluminum 0.1MF 10V +40, −20%	1
C53		Electrolytic 100MF 10V	1
C54		Mylar 0.047MF 50V ±10%	1
C55		Polystyrol 470PF 50V ±5%	1
C56		Aluminum 0.33MF 10V +40, −20%	1
C57		Electrolytic 1MF 10V	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
	RADIO TUNER P.C.B. ASSY		
C58		Electrolytic 2.2MF 10V	1
C59		Electrolytic 1MF 10V	1
C60		Mylar 0.015MF 50V ±10%	1
C61		Mylar 0.015MF 50V ±10%	1
C62		Aluminum 0.22MF 10V +40, −20%	1
C63		Aluminum 0.22MF 10V +40, −20%	1
C64		Mylar 0.0068MF 50V ±10%	1
C65		Mylar 0.0068MF 50V ±10%	1
C66		Mylar 0.01MF 50V ±10%	1
C67		Mylar 0.01MF 50V ±10%	1
C68		Electrolytic 470MF 6.3V	1
C69		Ceramic 0.022MF 50V +80, −20%	1
C70		Electrolytic 100MF 10V	1
C71		Ceramic 0.022MF 50V +80, −20%	1
C72		Ceramic 15PF 50V ±5%	1
D1		Diode, DS442	1
D2		Diode, DS442	1
D3		Diode, 1S553	1
D4		Diode, 1S188	1
D5		Diode, 1S188	1
D6		Diode, 1S188	1
D7		Diode, DS442	1
D8		Diode, 1S188	1
D9		Diode, 1S188	1
D10		Diode, 1S188	1
D11	4 2029 70430	Diode, WZ-061	1
IC1	4 2069 70232	IC, MPC1018	1
IC2	4 2069 70340	IC, HA11227	1
L1	4 2599 70192	RF Coil	1
L2	4 2659 70130	Loading Coil	1
L3	4 2589 70810	OSC Coil	1
L4	4 2659 70230	Loading Coil	1
L5	4 2579 70601	Bar Antenna	1
PVC1	4 2249 70451	Variable Condenser	1
P1	4 2229 72241	Potentiometer (B-2k)	1
P2	4 2229 72450	Potentiometer (B-10k)	1
P3	4 2229 72680	Potentiometer (B-500)	1
Q1	4 2039 70380	Transistor, 2SC1674	1
Q2		Transistor, 2SC930	1
Q3		Transistor, 2SC930	1
Q4	4 2039 70100	Transistor, 2SC945	1
R1		Carbon 100k ohm 1/4W ±5%	1
R2		Carbon 47k ohm 1/4W ±5%	1
R3		Carbon 2.2k ohm 1/4W ±5%	1
R4		Carbon 470 ohm 1/4W ±5%	1
R5		Carbon 100 ohm 1/4W ±5%	1
R6		Carbon 47k ohm 1/4W ±5%	1
R7		Carbon 100k ohm 1/4W ±5%	1
R8		Carbon 5.6k ohm 1/4W ±5%	1
R9		Carbon 100 ohm 1/4W ±5%	1
R10		Carbon 100k ohm 1/4W ±5%	1
R11		Carbon 220k ohm 1/4W ±5%	1
R12		Carbon 3.3k ohm 1/4W ±5%	1
R13		Carbon 220 ohm 1/4W ±5%	1
R14		Carbon 330k ohm 1/4W ±5%	1
R15		Carbon 220 ohm 1/4W ±5%	1
R16		Carbon 47 ohm 1/4W ±5%	1
R17		Carbon 56 ohm 1/4W ±5%	1
R18		Carbon 560 ohm 1/4W ±5%	1
R19		Carbon 560 ohm 1/4W ±5%	1
R20		Carbon 1k ohm 1/4W ±5%	1
R21		Carbon 1k ohm 1/4W ±5%	1
R22		Carbon 4.7k ohm 1/4W ±5%	1
R23		Carbon 4.7k ohm 1/4W ±5%	1
R24		Carbon 56k ohm 1/4W ±5%	1
R25		Carbon 330k ohm 1/4W ±5%	1
R26		Carbon 47 ohm 1/4W ±5%	1
R27		Carbon 5.6 ohm 1/4W ±5%	1
R28		Carbon 33 ohm 1/4W ±5%	1
R29		Carbon 10k ohm 1/4W ±5%	1

Ref. No.	Part No.	Description	Q'ty
	RADIO TUNER P.C.B. ASSY		
R30		Carbon 56 ohm 1/4W ±5%	1
R31		Carbon 56 ohm 1/4W ±5%	1
R32		Carbon 47k ohm 1/4W ±5%	1
R33		Carbon 10k ohm 1/4W ±5%	1
R34		Carbon 2.2k ohm 1/4W ±5%	1
R35		Carbon 4.7k ohm 1/4W ±5%	1
R36		Carbon 1k ohm 1/4W ±5%	1
R37		Carbon 22k ohm 1/4W ±5%	1
R38		Carbon 1k ohm 1/4W ±5%	1
R39		Carbon 5.6k ohm 1/4W ±5%	1
R40		Carbon 5.6k ohm 1/4W ±5%	1
R41		Carbon 470 ohm 1/4W ±5%	1
R42		Carbon 1k ohm 1/4W ±5%	1
R43		Carbon 1k ohm 1/4W ±5%	1
R44		Carbon 1k ohm 1/4W ±5%	1
R45		Carbon 1k ohm 1/4W ±5%	1
R46		Carbon 100k ohm 1/4W ±5%	1
R47		Carbon 5.6 ohm 1/4W ±5%	1
R48		Carbon 470 ohm 1/4W ±5%	1
R49		Carbon 5.6 ohm 1/4W ±5%	1
R50		Carbon 56k ohm 1/4W ±5%	1
R51		Carbon 56k ohm 1/4W ±5%	1
R52		Carbon 10k ohm 1/4W ±5%	1
R53		Carbon 100 ohm 1/4W ±5%	1
R56		Carbon 3.3k ohm 1/4W ±5%	1
	141 2 4729 04700	Staple 10	13
	141 2 4729 05000	Staple 5	4
S9	4 2319 72960	Rotary Switch (Band Selector)	1
TC1	4 2249 70290	Trimmer Condenser	1
TC2	4 2249 70350	Trimmer	1
TC3	4 2249 70290	Trimmer Condenser	1
TC4	4 2249 70290	Trimmer Condenser	1
TC5	4 2249 70350	Trimmer	1
TP1	4 2369 70240	GT Pin	1
TP6	4 2369 70740	RT Pin	1
TP7	4 2369 70740	RT Pin	1
TP8	4 2369 70740	RT Pin	1
TP9	4 2369 70740	RT Pin	1
TP10	4 2369 70740	RT Pin	1
TP11	4 2369 70740	RT Pin	1
TP12	4 2369 70740	RT Pin	1
TP13	4 2369 70740	RT Pin	1
TP14	4 2369 70740	RT Pin	1
	4 2369 70740	RT Pin	1
	4 2369 70740	RT Pin	1
T1	4 2569 70850	IFT	1
T2	4 2569 70320	IFT	1
T3	4 2569 70330	IFT	1
T4	4 2579 70721	Antenna Coil	1
T5	4 2589 71420	OSC Transformer	1
T6	4 2589 71411	OSC Transformer MW	1
T7	4 2589 71400	OSC Transformer	1
T8	4 2569 70910	IFT AM	1
T9	4 2569 70920	IFT AM	1
T10	4 2569 70720	IFT	1
	141 2 3229 23000	Shield Plate	1
	4 2569 70750	Shield Case	1
	141 2 3849 03100	Antenna Holder	2
		Screw, Pan Hd. Tapping-2 +M2.6x10	2
		Screw, Pan Hd. +M2.6x4	2
	141 2 3229 23800	Shield Plate	1
	SWITCH P.C.B. ASSY		
	4 1329 73960	Switch P.C.B. Assy	1
R406		Carbon 68 ohm 1/4W ±10%	1
R407		Carbon 39 ohm 1/4W ±10%	1
S4	4 2319 72461	Switch Lever (Tape Selector)	1
S5	4 2319 72461	Switch Lever (Mode Switch)	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
LED P.C.B. ASSY			
	4 1329 73970	LED P.C.B. Assy	1
D402		Diode, SLP-24B (Tape/Radio)	1
D403	4 2029 70560	Diode, SLP-224B (Phono)	1
	4 2269 30320	LED P.C.B.	1
POWER SUPPLY P.C.B. ASSY			
	4 1329 73983	Power Supply P.C.B. Assy	1
C301		Ceramic 0.0047MF 50V ±10%	1
C302		Ceramic 0.0047MF 50V ±10%	1
C303		Ceramic 0.0047MF 50V ±10%	1
C304		Ceramic 0.0047MF 50V ±10%	1
C305		Electrolytic 1000MF 16V	1
D301		Diode, DS17	1
D302		Diode, DS18	1
	4 2359 73682	AC DC Power Socket	1
	141 2 4359 21300	Socket Cover	1
F1	4 2349 70140	Fuse (1 AT)	1
	4 2359 70910	Fuse Holder	2
	141 2 4729 04400	Staple 12.5	1
AMPLIFIER P.C.B. ASSY			
	4 1329 73993	Amplifier P.C.B. Assy	1
C101		Ceramic 0.001MF 50V ±10%	1
C102		Electrolytic 10MF 10V	1
C103		Electrolytic 100MF 10V	1
C104		Ceramic 330PF 50V ±10%	1
C105		Ceramic 0.001MF 50V ±10%	1
C106		Ceramic 470PF 50V ±10%	1
C107		Electrolytic 22MF 10V	1
C108		Mylar 0.012MF 50V ±10%	1
C109		Mylar 0.027MF 50V ±10%	1
C110		Mylar 0.0022MF 50V ±10%	1
C111		Electrolytic 220MF 10V	1
C112		Electrolytic 10MF 10V	1
C113		Electrolytic 10MF 10V	1
C114		Electrolytic 10MF 10V	1
C115		Electrolytic 10MF 10V	1
C116		Electrolytic 10MF 10V	1
C117		Electrolytic 10MF 10V	1
C118		Mylar 0.056MF 50V ±10%	1
C119		Electrolytic 47MF 10V	1
C120		Ceramic 0.001MF 50V ±10%	1
C121		Electrolytic 0.47MF 10V	1
C122		Electrolytic 1MF 10V	1
C123		Mylar 0.056MF 50V ±10%	1
C124		Mylar 0.0039MF 50V ±10%	1
C125		Aluminum 0.1MF 10V ±10%	1
C126		Electrolytic 2.2MF 10V	1
C127		Electrolytic 220MF 10V	1
C128		Electrolytic 220MF 10V	1
C129		Electrolytic 22MF 10V	1
C130		Ceramic 680PF 50V ±10%	1
C131		Ceramic 220PF 50V ±10%	1
C132		Mylar 0.15MF 50V ±10%	1
C133		Electrolytic 470MF 10V	1
C134		Electrolytic 1000MF 6.3V	1
C136		Mylar 0.047MF 50V ±10%	1
C137		Ceramic 330PF 50V ±10%	1
C138		Electrolytic 47MF 10V	1
C139		Mylar 0.033MF 50V ±10%	1
C140		Ceramic 0.0039MF 50V ±10%	1
C141		Ceramic 330PF 50V ±10%	1
C142		Electrolytic 220MF 10V	1
C143		Electrolytic 220MF 10V	1
C201		Ceramic 0.001MF 50V ±10%	1
C202		Electrolytic 10MF 10V	1
C203		Electrolytic 100MF 10V	1
C204		Ceramic 330PF 50V ±10%	1
C205		Ceramic 0.001MF 50V ±10%	1
C206		Ceramic 470PF 50V ±10%	1

Ref. No.	Part No.	Description	Q'ty
AMPLIFIER P.C.B. ASSY			
C207		Electrolytic 22MF 10V	1
C208		Mylar 0.012MF 50V ±10%	1
C209		Mylar 0.027MF 50V ±10%	1
C210		Mylar 0.0022MF 50V ±10%	1
C211		Electrolytic 220MF 10V	1
C212		Electrolytic 10MF 10V	1
C213		Electrolytic 10MF 10V	1
C214		Electrolytic 10MF 10V	1
C215		Electrolytic 10MF 10V	1
C216		Electrolytic 10MF 10V	1
C217		Electrolytic 10MF 10V	1
C218		Mylar 0.056MF 50V ±10%	1
C219		Electrolytic 47MF 10V	1
C220		Ceramic 0.001MF 50V ±10%	1
C221		Electrolytic 0.47MF 10V	1
C222		Electrolytic 1MF 10V	1
C223		Mylar 0.056MF 50V ±10%	1
C224		Mylar 0.0039MF 50V ±10%	1
C225		Aluminum 0.1MF 10V ±10%	1
C226		Electrolytic 2.2MF 10V	1
C227		Electrolytic 100MF 10V	1
C228		Electrolytic 220MF 10V	1
C229		Electrolytic 22MF 10V	1
C230		Ceramic 680PF 50V ±10%	1
C231		Ceramic 220PF 50V ±10%	1
C232		Mylar 0.15MF 50V ±10%	1
C233		Electrolytic 470MF 10V	1
C234		Electrolytic 1000MF 6.3V	1
C236		Mylar 0.047MF 50V ±10%	1
C237		Ceramic 330PF 50V ±10%	1
C238		Electrolytic 47MF 10V	1
C239		Mylar 0.033MF 50V ±10%	1
C240		Ceramic 0.0039MF 50V ±10%	1
C241		Ceramic 330PF 50V ±10%	1
C242		Electrolytic 220MF 10V	1
C243		Electrolytic 220MF 10V	1
C403		Electrolytic 220MF 10V	1
C404		Electrolytic 1MF 16V	1
C405		Mylar 0.056MF 50V ±10%	1
C406		Mylar 0.027MF 50V ±10%	1
C407		Ceramic 0.0022MF 50V ±10%	1
C408		Ceramic 0.0022MF 50V ±10%	1
C409		Ceramic 560PF 50V ±10%	1
C410		Ceramic 180PF 50V ±10%	1
C412		Electrolytic 1000MF 16V	1
D101		Diode, DS448	1
D102		Diode, DS448	1
D103		Diode, 1S188	1
D104		Diode, 1S188	1
D201		Diode, DS448	1
D202		Diode, DS448	1
D203		Diode, 1S188	1
D204		Diode, 1S188	1
D401		Diode, DS448	1
J1	4 2359 71780	Jack 1P (Microphone)	1
J2	4 2359 71780	Jack 1P (Microphone)	1
J3	4 2359 71390	Jack 1P (Ext. Speaker)	1
J4	4 2359 71390	Jack 1P (Ext. Speaker)	1
J5	4 2359 73243	Jack 1P (Headphone)	1
J6	4 2359 71552	DIN Socket 5P	1
J7	4 2359 71790	Jack 1P (Remote)	1
J8	4 2359 73600	Jack 2P (Phono)	1
L101	4 2729 70080	Peaking Coil (3.9 mH)	1
L102	4 2559 70030	Coil (33 mH)	1
L201	4 2729 70080	Peaking Coil (3.9 mH)	1
L202	4 2559 70030	Coil (33 mH)	1
L401	4 2729 70140	Peaking Coil (3.3 mH)	1
L402	4 2539 70300	Micro Inductor (10 μH)	1
P101	4 2229 72570	Potentiometer (B-10k)	1
P202	4 2229 72800	Potentiometer (B-2k)	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
		AMPLIFIER P.C.B. ASSY	
P103	4 2229 72610	Potentiometer (B-220k)	1
P104	4 2229 72891	Potentiometer (B-1k)	1
P201	4 2229 72570	Potentiometer (B-10k)	1
P203	4 2229 72610	Potentiometer (B-220k)	1
IC101		IC, LA3210	1
Q101		Transistor, 2SC693	1
Q102		Transistor, 2SC693	1
Q103	4 2039 70100	Transistor, 2SC945	1
Q104		Transistor, 2SC536	1
IC102		IC, LA4112	1
Q105	4 2039 70101	Transistor, 2SC945	1
IC201		IC, LA3210	1
Q201		Transistor, 2SC693	1
Q202		Transistor, 2SC693	1
Q203	4 2039 70100	Transistor, 2SC945	1
Q204		Transistor, 2SC536	1
IC202		IC, LA4112	1
Q205	4 2039 70100	Transistor, 2SC945	1
Q402		Transistor, 2SB22	1
Q403		Transistor, 2SB22	1
R102		Carbon 6.8k ohm 1/4W ±10%	1
R104		Carbon 10 ohm 1/4W ±10%	1
R113		Carbon 330k ohm 1/4W ±10%	1
R114		Carbon 12k ohm 1/4W ±10%	1
R119		Carbon 3.3k ohm 1/4W ±10%	1
R120		Carbon 4.7k ohm 1/4W ±10%	1
R121		Carbon 2.7k ohm 1/4W ±10%	1
R123		Carbon 33 ohm 1/4W ±10%	1
R129		Carbon 3.9k ohm 1/4W ±10%	1
R130		Carbon 22 ohm 1/4W ±10%	1
R136		Carbon 1M ohm 1/4W ±10%	1
R139		Carbon 10 ohm 1/4W ±10%	1
R142		Metal 56 ohm 1W ±10%	1
R145		Carbon 1M ohm 1/4W ±10%	1
R147		Carbon 22k ohm 1/4W ±10%	1
R148		Carbon 27k ohm 1/4W ±10%	1
R151		Carbon 10k ohm 1/4W ±10%	1
R152		Carbon 1k ohm 1/4W ±10%	1
R153		Carbon 220 ohm 1/4W ±10%	1
R202		Carbon 6.8k ohm 1/4W ±10%	1
R204		Carbon 10 ohm 1/4W ±10%	1
R212		Carbon 1.5k ohm 1/4W ±10%	1
R213		Carbon 330k ohm 1/4W ±10%	1
R214		Carbon 12k ohm 1/4W ±10%	1
R219		Carbon 3.3k ohm 1/4W ±10%	1
R220		Carbon 4.7k ohm 1/4W ±10%	1
R221		Carbon 2.7k ohm 1/4W ±10%	1
R223		Carbon 33 ohm 1/4W ±10%	1
R229		Carbon 3.9k ohm 1/4W ±10%	1
R230		Carbon 22 ohm 1/4W ±10%	1
R235		Carbon 680 ohm 1/4W ±10%	1
R236		Carbon 1M ohm 1/4W ±10%	1
R239		Carbon 10 ohm 1/4W ±10%	1
R242		Metal 56 ohm 1W ±10%	1
R245		Carbon 1M ohm 1/4W ±10%	1
R247		Carbon 22k ohm 1/4W ±10%	1
R248		Carbon 27k ohm 1/4W ±10%	1
R251		Carbon 10k ohm 1/4W ±10%	1
R253		Carbon 220 ohm 1/4W ±10%	1
R408		Carbon 5.6 ohm 1/4W ±10%	1
R409		Carbon 5.6 ohm 1/4W ±10%	1
R412		Carbon 51k ohm 1/4W ±5%	1
R414		Carbon 5.6k ohm 1/4W ±10%	1
R415		Carbon 10 ohm 1/4W ±10%	1
S1	4 2319 72860	Slide Switch (Record/Play)	1
S2	4 2319 72860	Slide Switch (Record/Play)	1
S3	4 2319 72950	Lever Switch (Function)	1
S6	4 2319 71990	Slide Switch (Beat)	1
S10	4 2319 73000	Slide Switch (DIN)	1
T301	4 2589 71240	OSC Transformer	1

Ref. No.	Part No.	Description	Q'ty
		AMPLIFIER P.C.B. ASSY	
VR1	4 2229 71551	Volume Control (Volume B-20k)	1
VR2	4 2229 71542	Volume Control (Tone A-20k)	1
	141 0 3679 02000	Jack Plate Assy	1
		Screw, Pan Hd. Tapping-2 +M3.0x10	2
	141 2 3659 10200	Beat Switch Bracket	1
		Screw, Pan Hd. +M2.6x5	3
	4 2369 70740	RT Pin	5
	4 2359 70990	RT Pin Socket	5
	141 2 4729 00200	Lug	1
	141 2 4729 04400	Staple 12.5	14
		MECHANISM	
	4 2269 30330	LED P.C.B.	1
S7	4 2319 72010	Leaf Switch (Power)	1
S8	4 2319 72010	Leaf Switch (Muting)	1
HD2	4 2429 71150	Erase Head	1
HD1	4 2429 71220	R/P Head	1
ME3	4 5119 70369	Indicator Assy (Tuning/Battery)	1
	4 5279 70753	Motor	1
	141 0 1539 00200	Record Button Assy	1
	141 0 1539 00201	Stop Button Assy	1
	141 0 1539 00202	Pause Button Assy	1
	141 0 1539 00203	F. FWD Button Assy	1
	141 0 1539 00204	Play Button Assy	1
	141 0 1539 00205	Rewind Button Assy	1
	141 0 3119 14500	Chassis Assy	1
	141 0 3519 12100	Support Assy	1
	141 0 5219 03900	Flywheel Assy	1
	141 0 5419 02300	Pinch Roller Assy	1
	141 0 5519 05900	Friction Assy	1
	141 0 7439 04700	Gear Lever Assy	1
	141 0 7439 05400	Fast Wind Arm Assy	1
	141 0 7439 05500	Take-up Arm Assy	1
	141 2 1619 38500	Button Plate	6
	141 2 2629 02900	Tuning Bracket	1
	141 2 2899 06800	Adhesive Sheet	1
	141 2 3119 10100	Cabinet Chassis	1
	141 2 3229 24200	Volume Shield	1
	141 2 3529 18000	Spacer, Base	1
	141 2 3689 04700	Diode Socket	1
	141 2 4219 05400	Screw, Washer	4
	141 2 4219 11201	Screw	6
	141 2 4219 12900	Screw, Washer	2
	141 2 4219 14000	Screw	6
	141 2 4419 10400	Cushion	2
	141 2 4459 20500	Brake Cover	2
	141 2 4469 12300	Meter Cushion	1
	141 2 4539 06700	Washer	1
	141 2 4539 14800	Washer	1
	141 2 4539 15800	Washer	1
	141 2 4729 03600	Lug	1
	141 2 5319 03500	Reel Fin	2
	141 2 5319 05100	Reel Gear	2
	141 2 5369 00400	Cap, Reel Plate	2
	141 2 5389 02600	Dial Drum	1
	141 2 5519 03300	Dial Roller A	6
	141 2 5519 21600	Idler Gear	1
	141 2 5519 21700	Fine Gear	1
	141 2 5519 22000	Take-up Gear	1
	141 2 5519 22300	Fast Wind Gear	2
	141 2 5519 22400	Rewind Gear	1
	141 2 5519 22500	Auto Shut-off Pulley	1
	141 2 5519 25400	Gear	2
	141 2 5529 07700	Lever Shaft	1
	141 2 5649 09900	Take-up Belt	1
	141 2 5649 10000	Drive Belt	1
	141 2 5649 10100	Counter Belt	1
	141 2 5649 12300	Auto Shut-off Belt	1
	141 2 6139 12500	Button Frame	1
	141 2 7149 03200	Brake	1

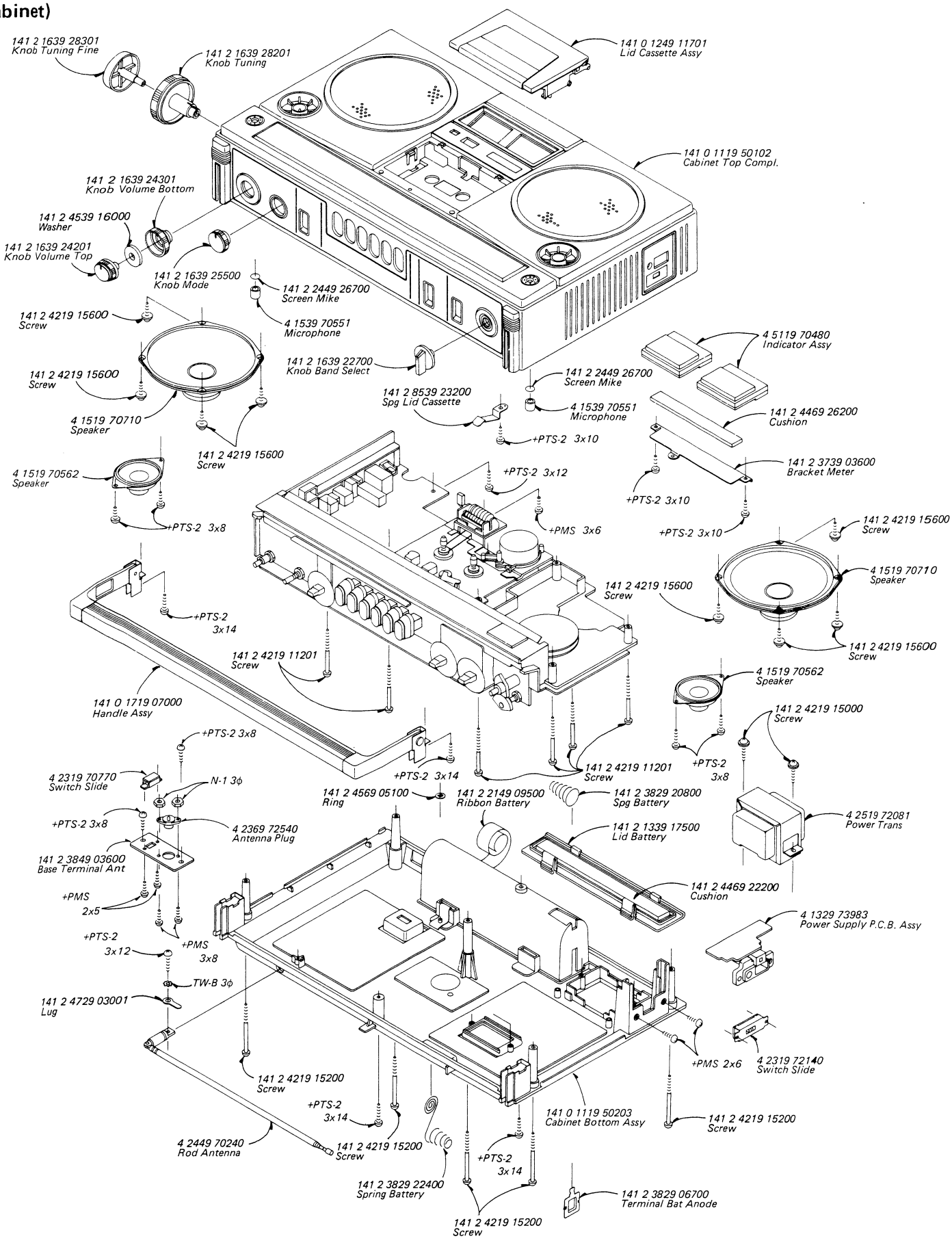
PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
	MECHANISM		
	141 2 7319 23500	Pause Plate	1
	141 2 7319 29300	Fast Wind Plate	1
	141 2 7319 29400	Slide Base	1
	141 2 7319 29500	Lock Plate	1
	141 2 7419 42900	Auto Shut-off Lever	1
	141 2 7419 44900	Pause Lever	1
	141 2 7419 45000	Review Lever	1
	141 2 7419 45100	Cue Lever	1
	141 2 7419 45200	Stop Eject Lever	1
	141 2 7419 48300	Record Stop Lever	1
	141 2 7419 48400	Eject Lever	1
	141 2 7519 29500	Tuning Shaft	1
	141 2 7519 30000	Fine Shaft	1
	141 2 7519 34400	Eject Lever Pin	1
	141 2 7519 35000	Knob Shaft	1
	141 2 8119 05200	Counter	1
	141 2 8219 23600	Pointer	1
	141 2 8219 23702	Dial Panel	1
	141 2 8419 08200	Interlock Lever	1
	141 2 8429 05100	Record Plate	1
	141 2 8519 06800	Spring, Power Switch Actuating Pin	1
	141 2 8519 19300	Spring, Brake	1
	141 2 8519 53000	Spring, Azimuth	1
	141 2 8519 67000	Spring, Interlock	1
	141 2 8519 67100	Spring, Fast Wind	1
	141 2 8519 67200	Spring, Lock	1
	141 2 8519 67300	Spring, Take-up Arm	1
	141 2 8519 67400	Spring, Eject Lever	1
	141 2 8519 67500	Spring, Slide Base	1
	141 2 8519 67700	Spring, Pinch Roller	1
	141 2 8519 67800	Spring, Auto Shut-off	1
	141 2 8519 67900	Spring, Reel	2
	141 2 8519 68000	Spring, Button Plate	2
	141 2 8519 68001	Spring, Play Button	1
	141 2 8519 68100	Spring, Pause	1
	141 2 8519 68200	Spring, Record Plate	1
	141 2 8519 68800	Spring, Brake	1
	141 2 8539 30000	Spring, Cassette	1
C411		Electrolytic 220MF 16V	1
C413		Ceramic 0.022MF 50V ±10%	1
		Screw, Pan Hd. +M3.0x5	3
		Screw, Pan Hd. +M3.0x6	1
		Screw, Pan Hd. +M3.0x6	1
		Screw, Cylinder Hd. -M2.0x10	1
		Screw, Pan Hd. Tapping-2 +M3.0x10	5
		Screw, Pan Hd. Tapping-2 +M3.0x10	2
		Screw, Pan Hd. Tapping-2 +M3.0x12	6
		Screw, Pan Hd. Tapping-2 +M3.0x12	1
		Screw, Bind Hd. Tapping-2 +M2.0x6	5
		Washer M2.0x7x0.3	1
		E Ring M2.0	3
		E Ring M2.5	1
		E Ring M3.0	1
		E Ring M6.0	1
		Screw, Pan Hd. Tapping-2 +M2.6x6	2
		Screw, Pan Hd. Tapping-2 +M2.6x8	1
		Screw, Pan Hd. Tapping-2 +M3.0x16	1
D404		Diode, SLP-24B (FM Stereo)	1
	141 2 2419 11800	Switch Veil	1
	141 2 2449 25300	Screen, Switch Knob	3
	141 2 3229 23600	Shield Plate	1
	141 2 4469 27000	Cushion	2
	141 2 8529 02900	Spring, Record	2
		Screw, Pan Hd. Tapping-2 +M3.0x8	1
		Washer M3.1x8.0x1.0	1

NOTES:
1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.

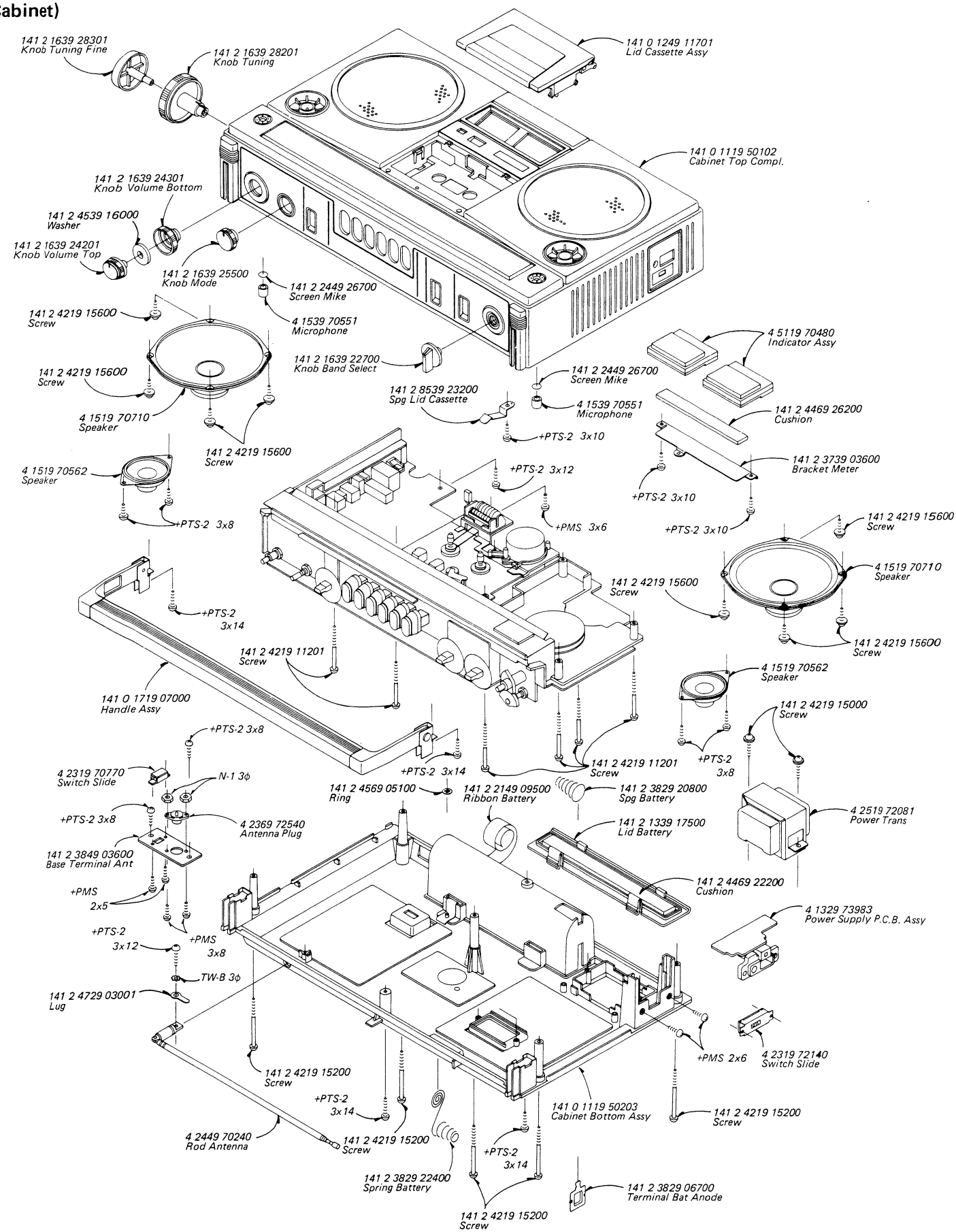
EXPLODED VIEW

(Cabinet)



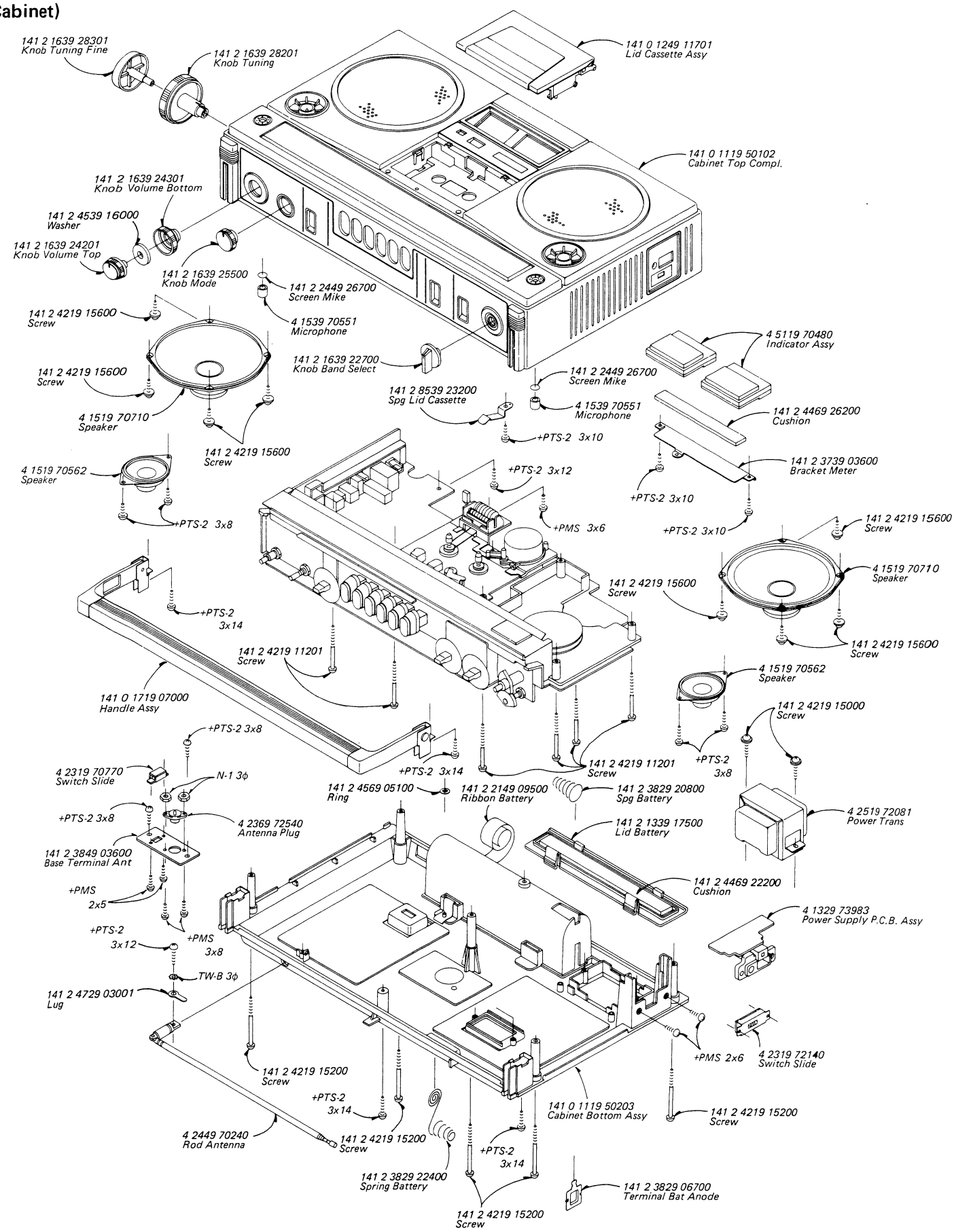
EXPLODED VIEW

(Cabinet)



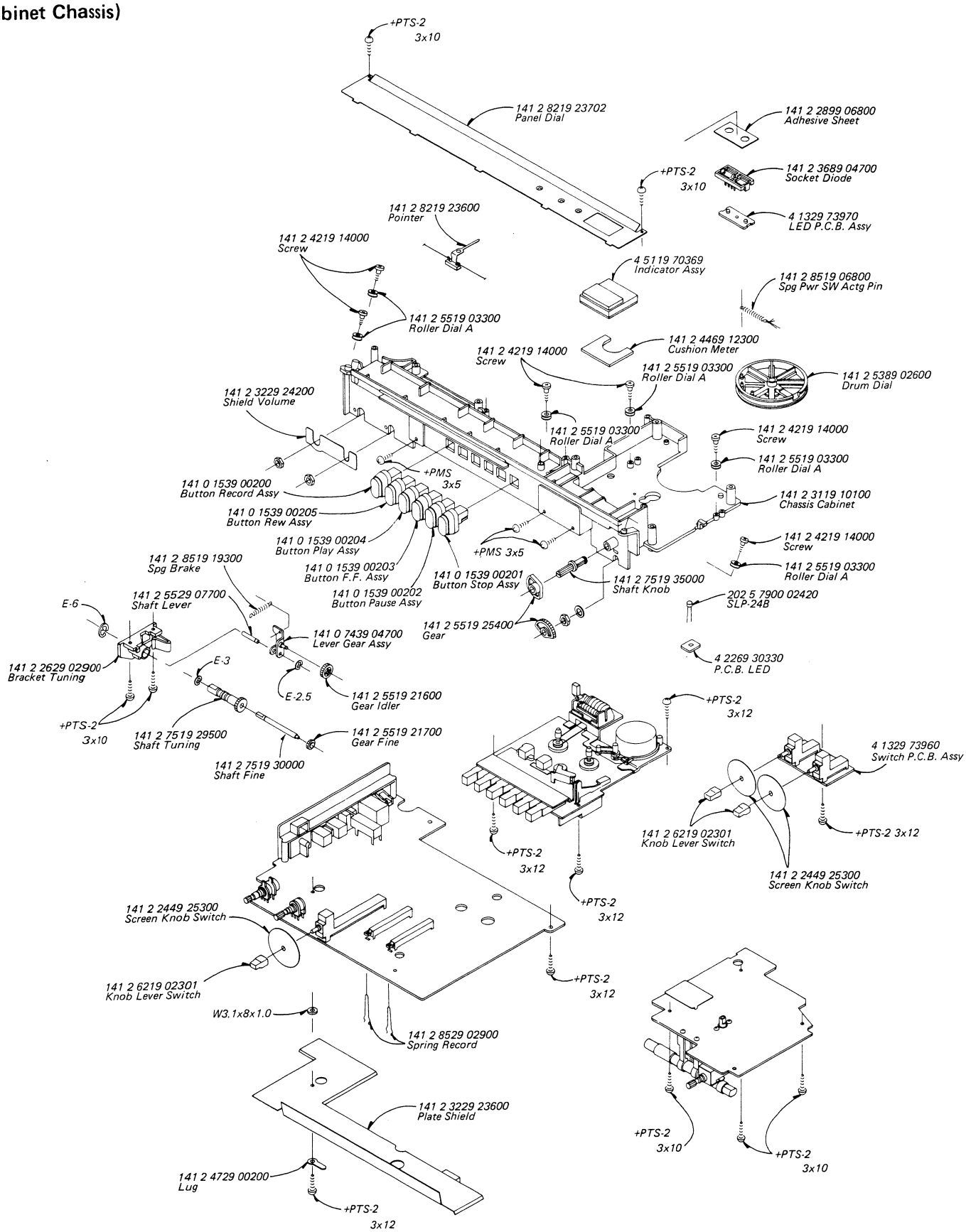
EXPLODED VIEW

(Cabinet)



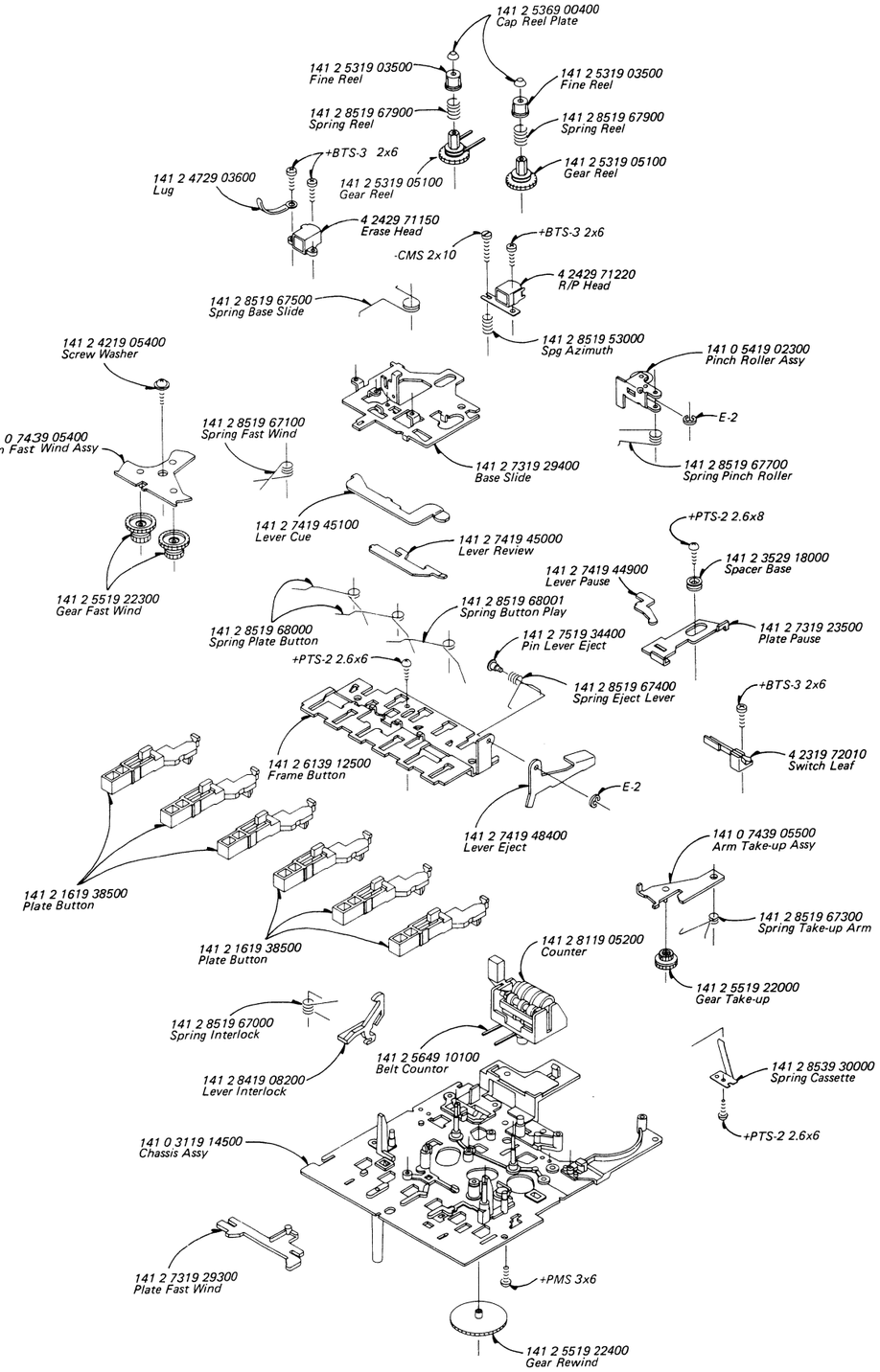
EXPLODED VIEW (Continued)

Cabinet Chassis)



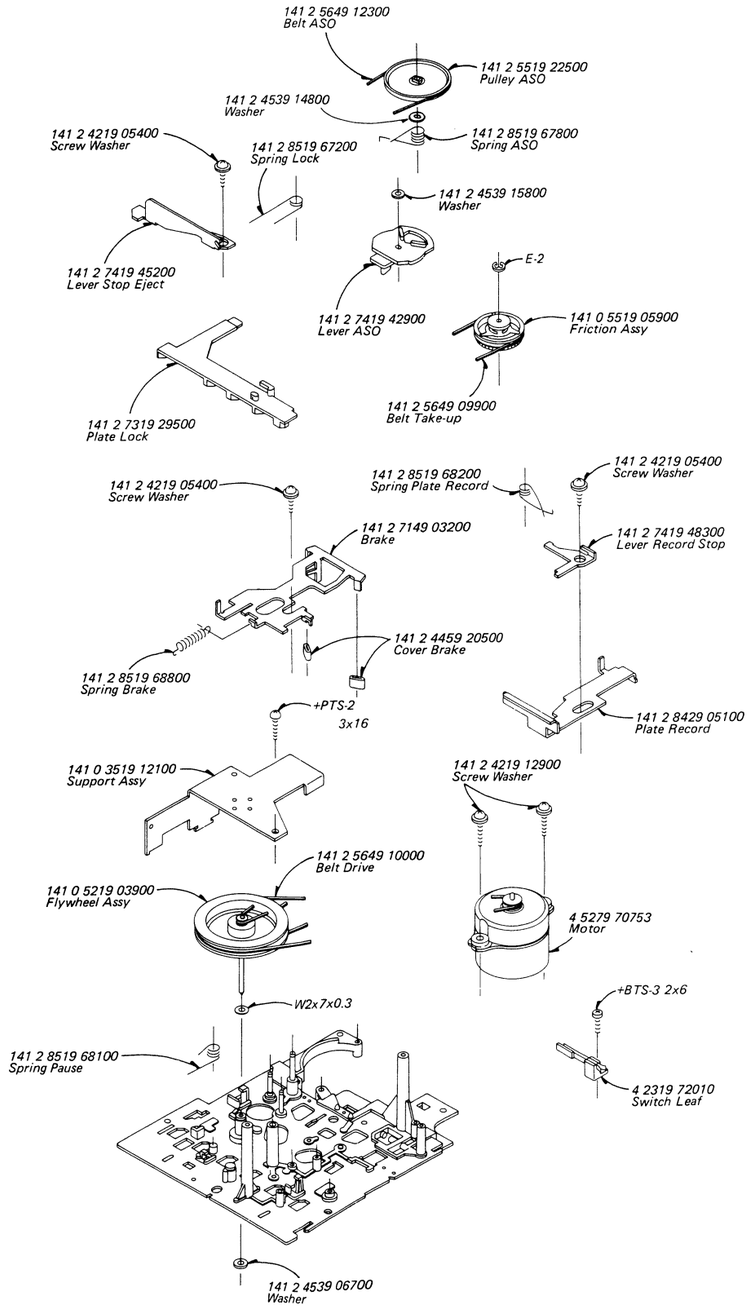
EXPLODED VIEW (Continued)

(Chassis Top)

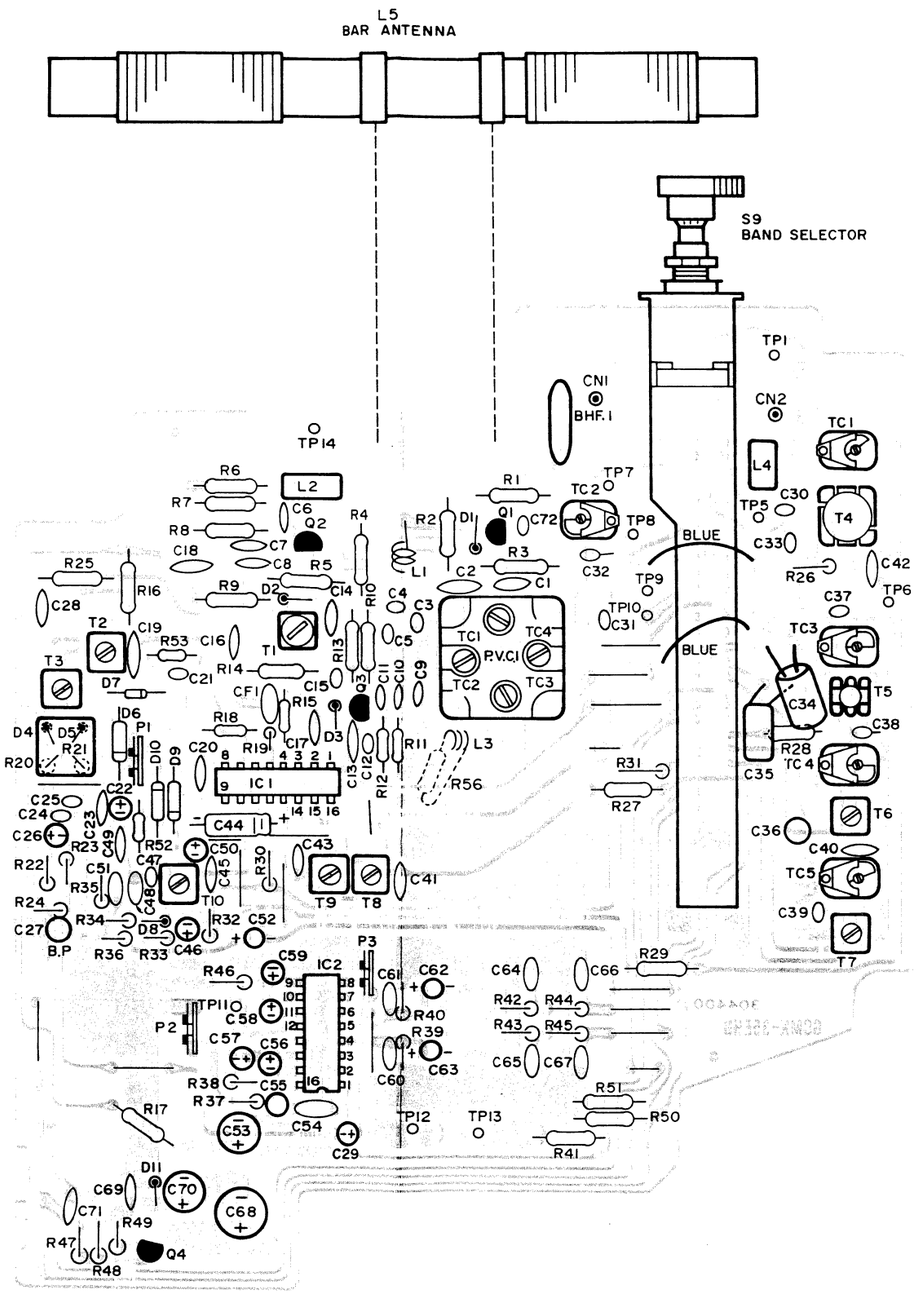


EXPLODED VIEW (Continued)

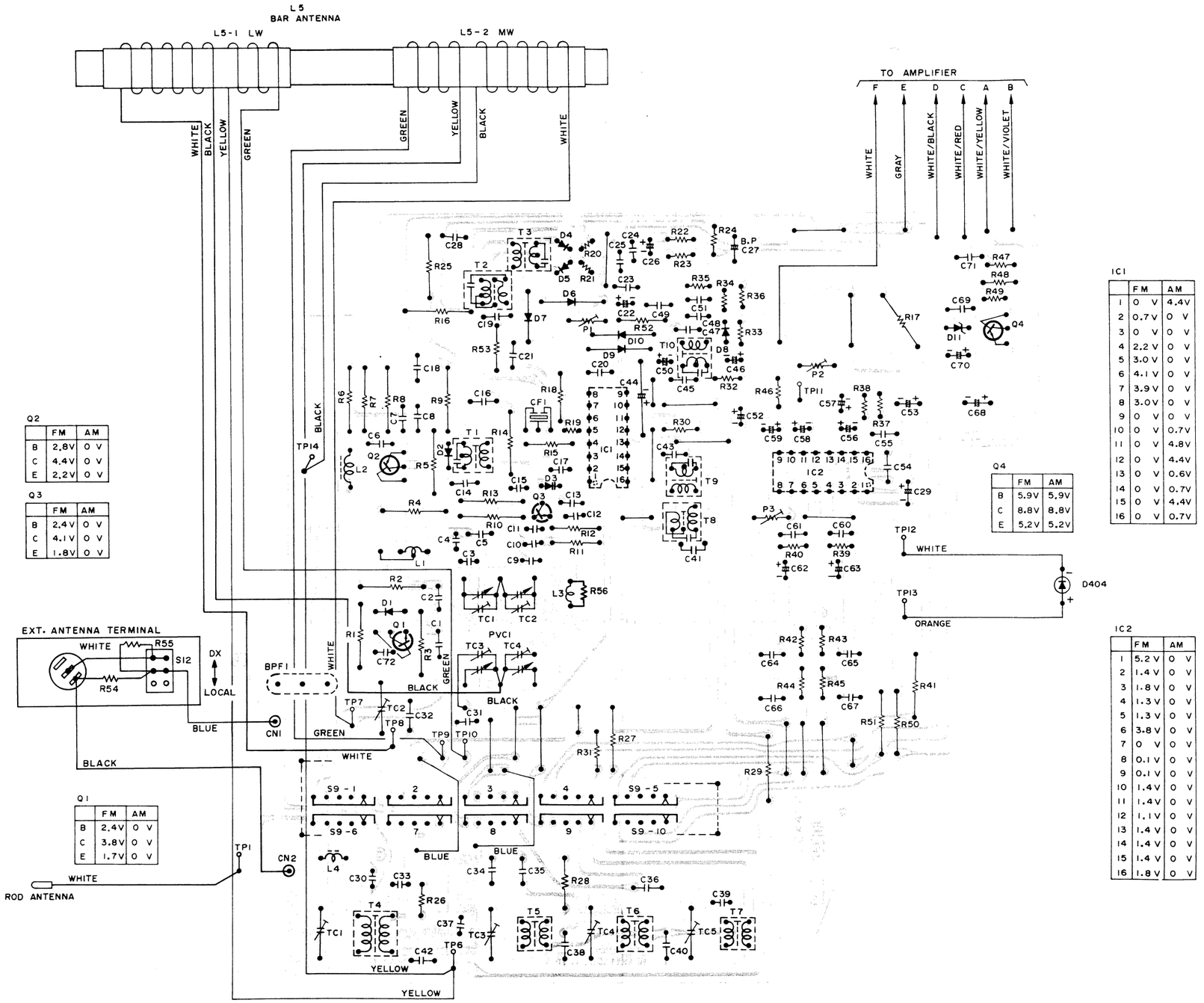
(Chassis Bottom)



TUNER P.C.BOARD(Top View)



TUNER P.C.BOARD (Bottom View)



Q2

	FM	AM
B	2.8V	0 V
C	4.4V	0 V
E	2.2V	0 V

Q3

	FM	AM
B	2.4V	0 V
C	4.1V	0 V
E	1.8V	0 V

Q1

	FM	AM
B	2.4V	0 V
C	3.8V	0 V
E	1.7V	0 V

Q4

	FM	AM
B	5.9V	5.9V
C	8.8V	8.8V
E	5.2V	5.2V

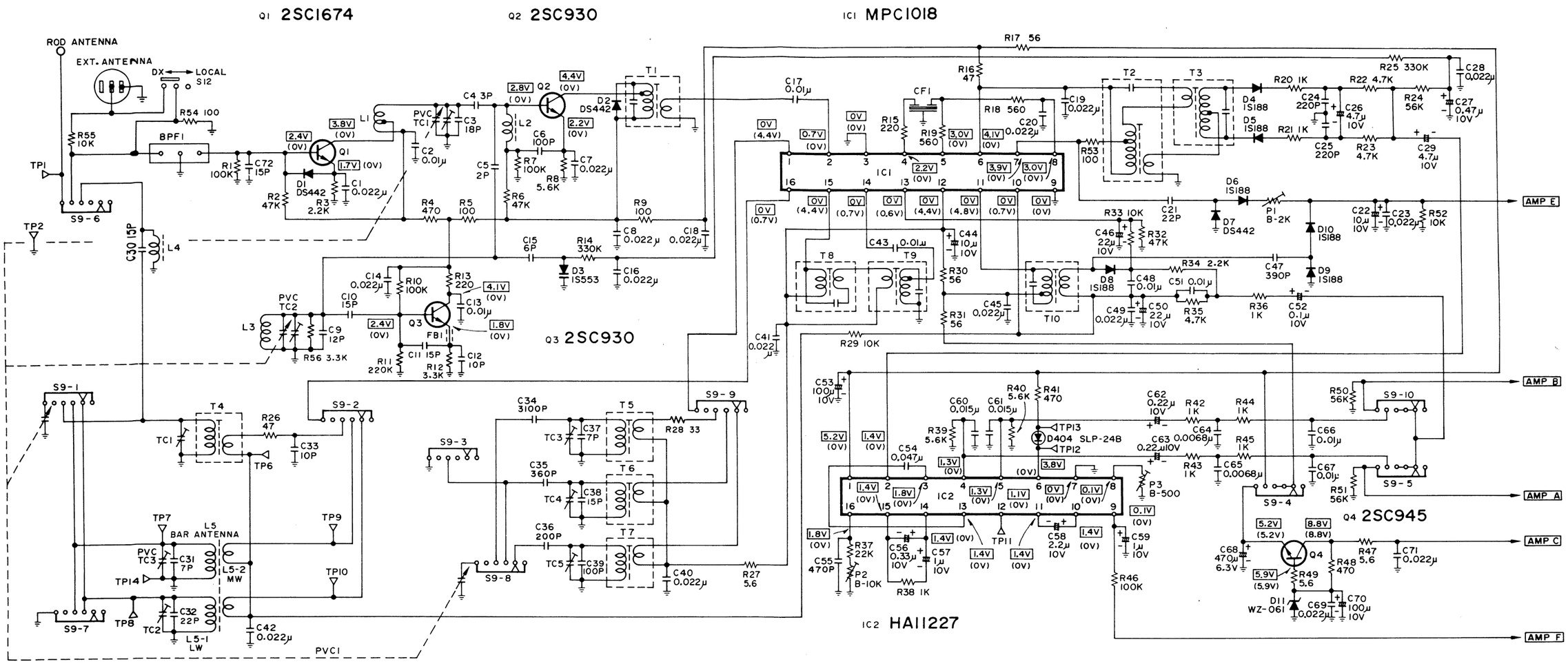
IC1

	FM	AM
1	0 V	4.4V
2	0.7V	0 V
3	0 V	0 V
4	2.2 V	0 V
5	3.0 V	0 V
6	4.1 V	0 V
7	3.9 V	0 V
8	3.0V	0 V
9	0 V	0 V
10	0 V	0.7V
11	0 V	4.8V
12	0 V	4.4V
13	0 V	0.6V
14	0 V	0.7V
15	0 V	4.4V
16	0 V	0.7V

IC2

	FM	AM
1	5.2 V	0 V
2	1.4 V	0 V
3	1.8 V	0 V
4	1.3 V	0 V
5	1.3 V	0 V
6	3.8 V	0 V
7	0 V	0 V
8	0.1 V	0 V
9	0.1 V	0 V
10	1.4 V	0 V
11	1.4 V	0 V
12	1.1 V	0 V
13	1.4 V	0 V
14	1.4 V	0 V
15	1.4 V	0 V
16	1.8 V	0 V

SCHEMATIC DIAGRAM(Tuner)



TRANSISTOR BOTTOM VIEW

B 2SC930
C 2SC945
E 2SC1674

S9-1 2 3 4 S9-5
S9-6 7 8 9 S9-10
BAND SELECTOR
FM ◄► SW ◄► MW ◄► LW

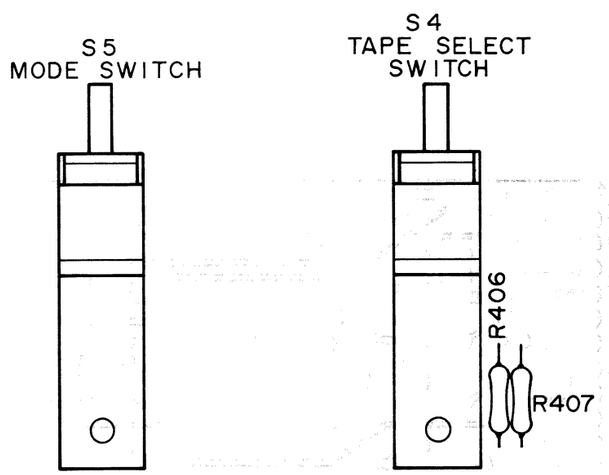
IC BOTTOM VIEW

MPC1018 (16 15 14 13 12 11 10 9 / 1 2 3 4 5 6 7 8)

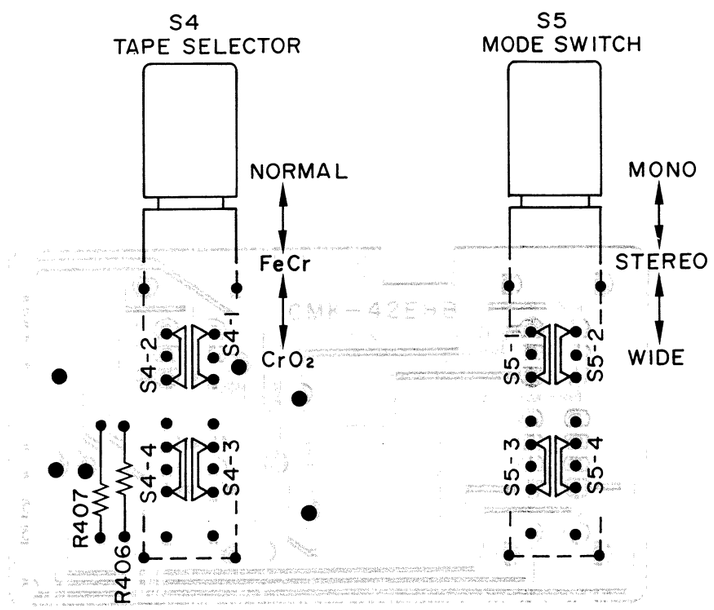
HA11227 (16 15 14 13 12 11 10 9 / 1 2 3 4 5 6 7 8)

SWITCH P.C.BOARD

(Top View)

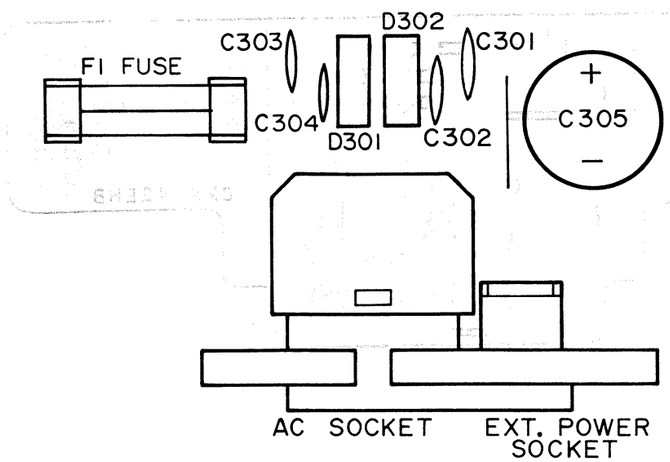


(Bottom View)

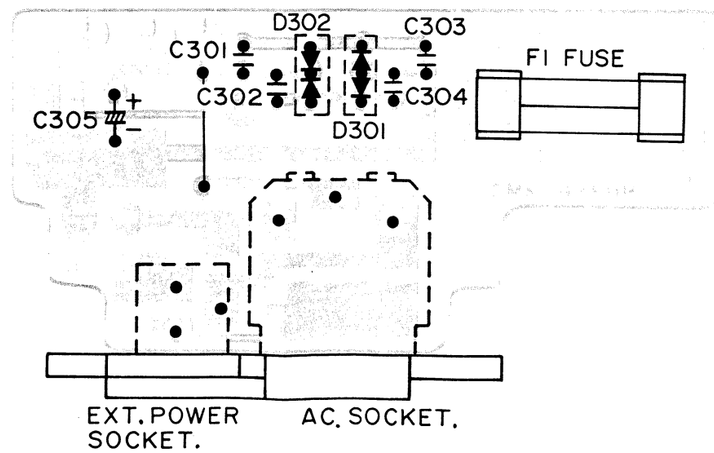


POWER SUPPLY P.C.BOARD

(Top View)

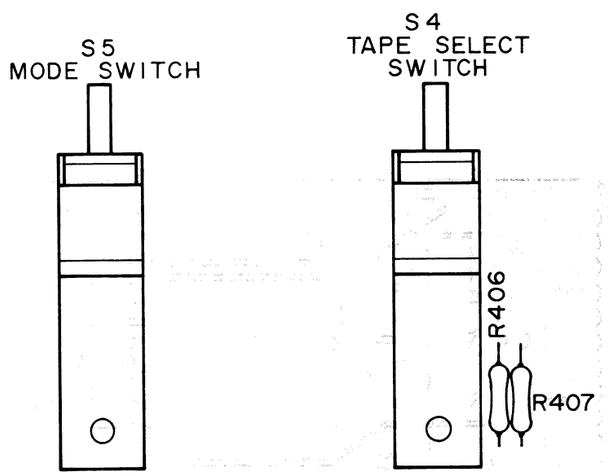


(Bottom View)

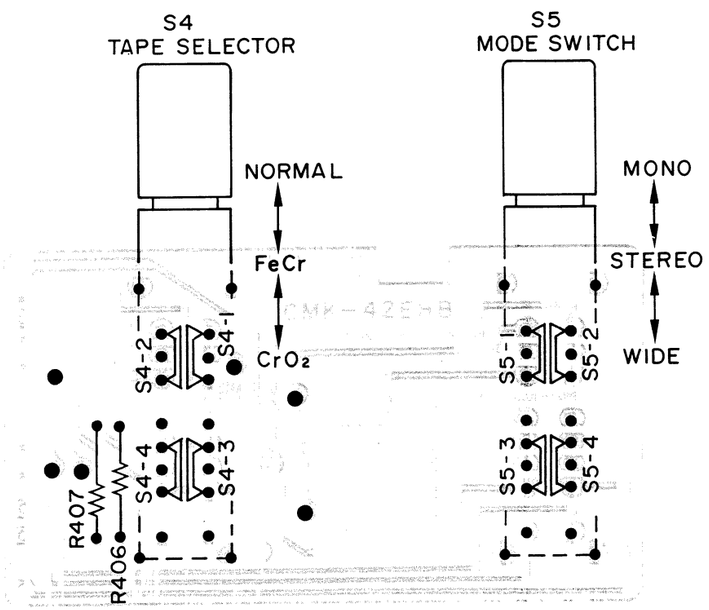


SWITCH P.C.BOARD

(Top View)

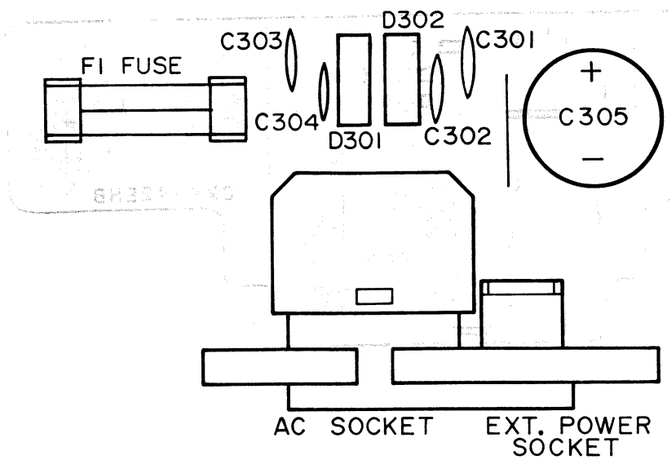


(Bottom View)

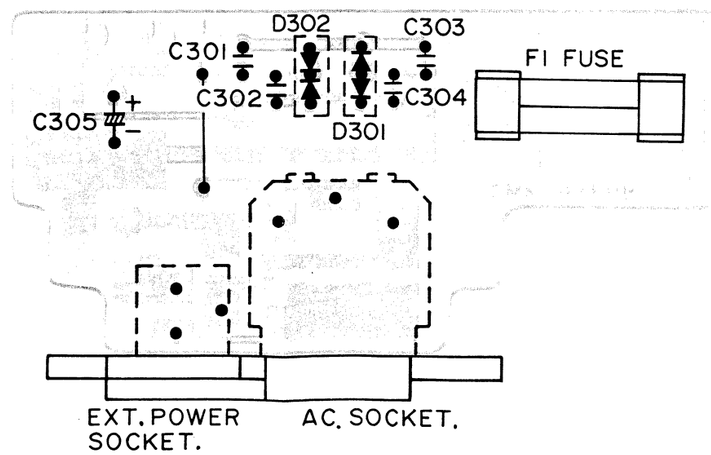


POWER SUPPLY P.C.BOARD

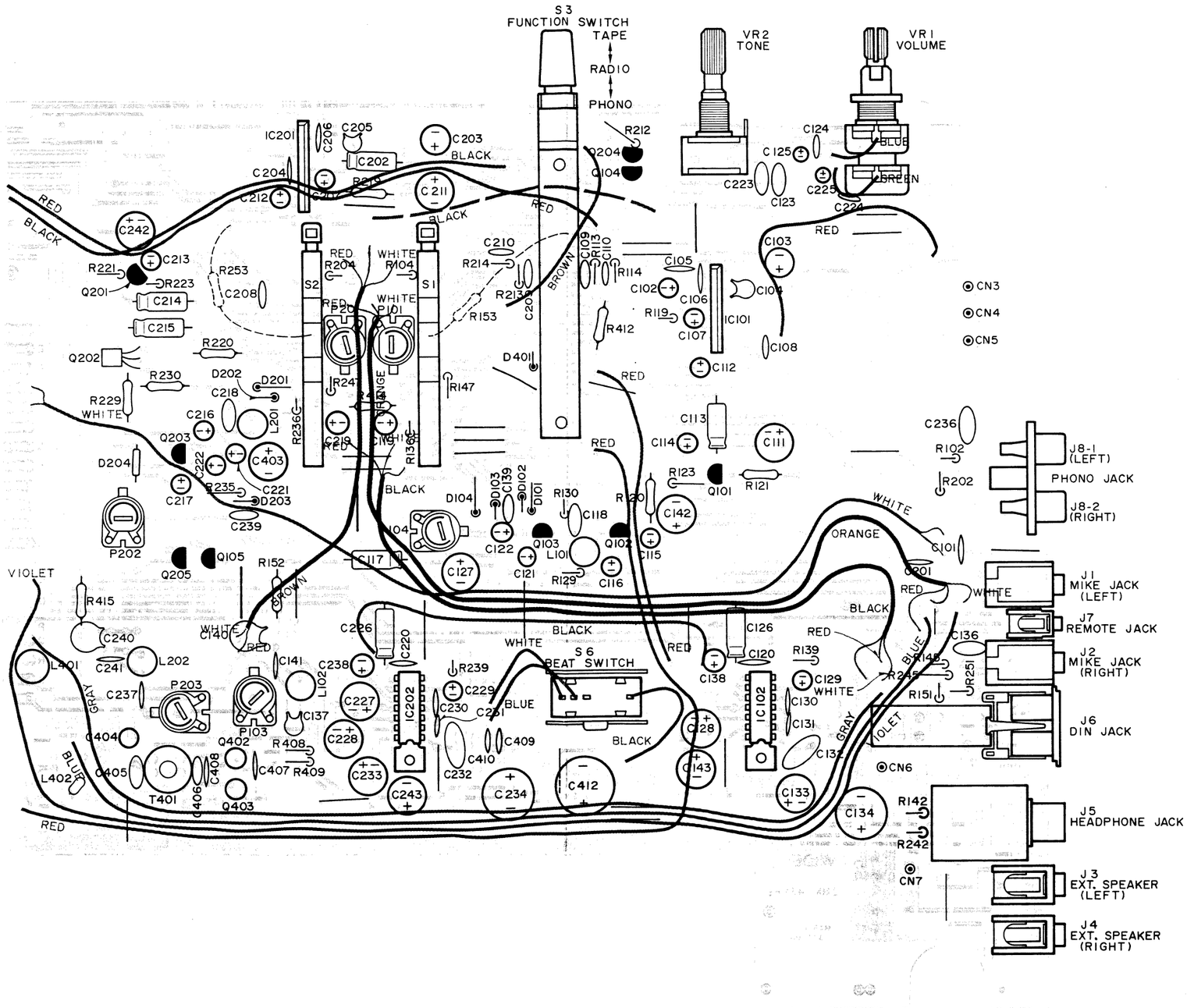
(Top View)



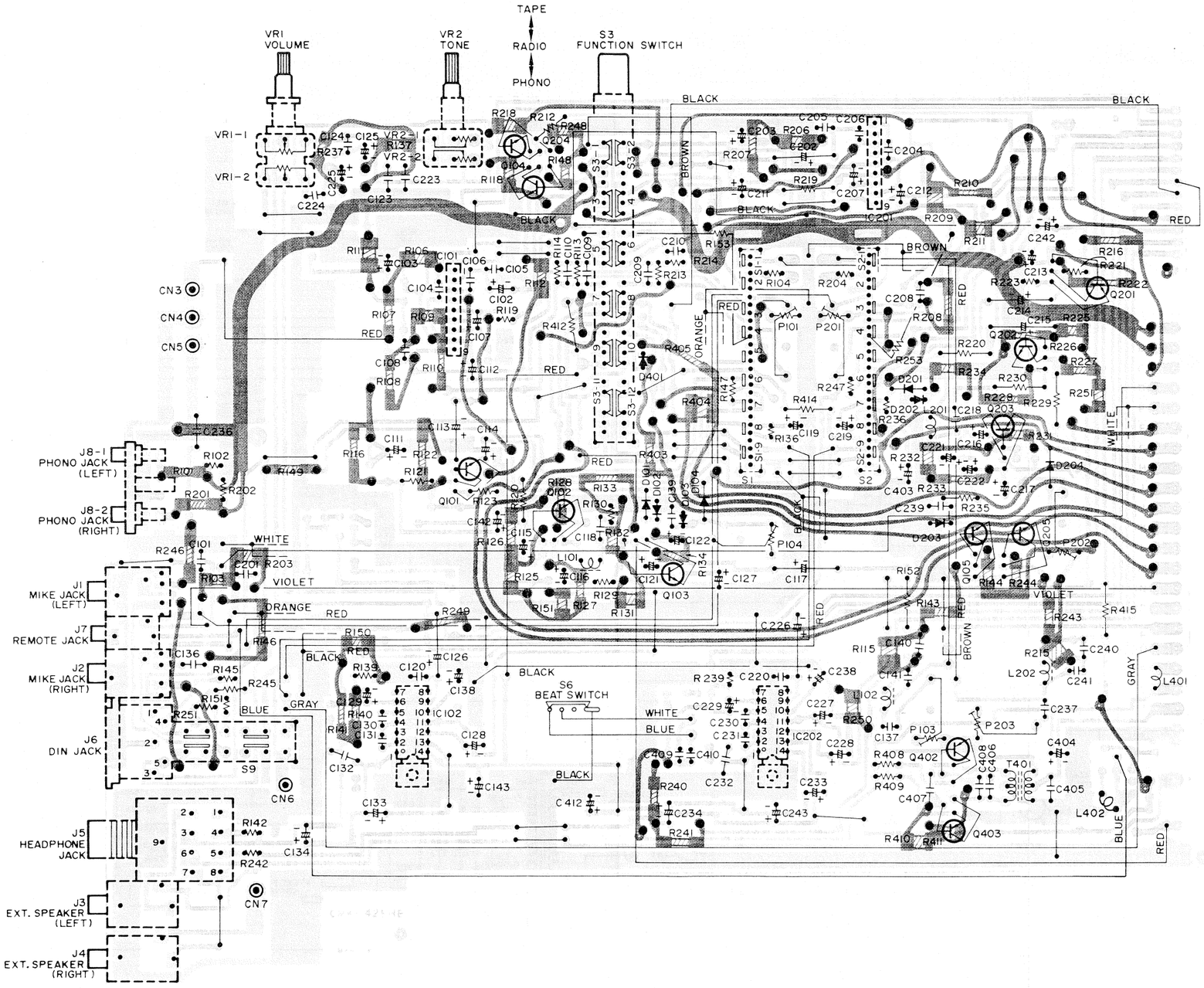
(Bottom View)



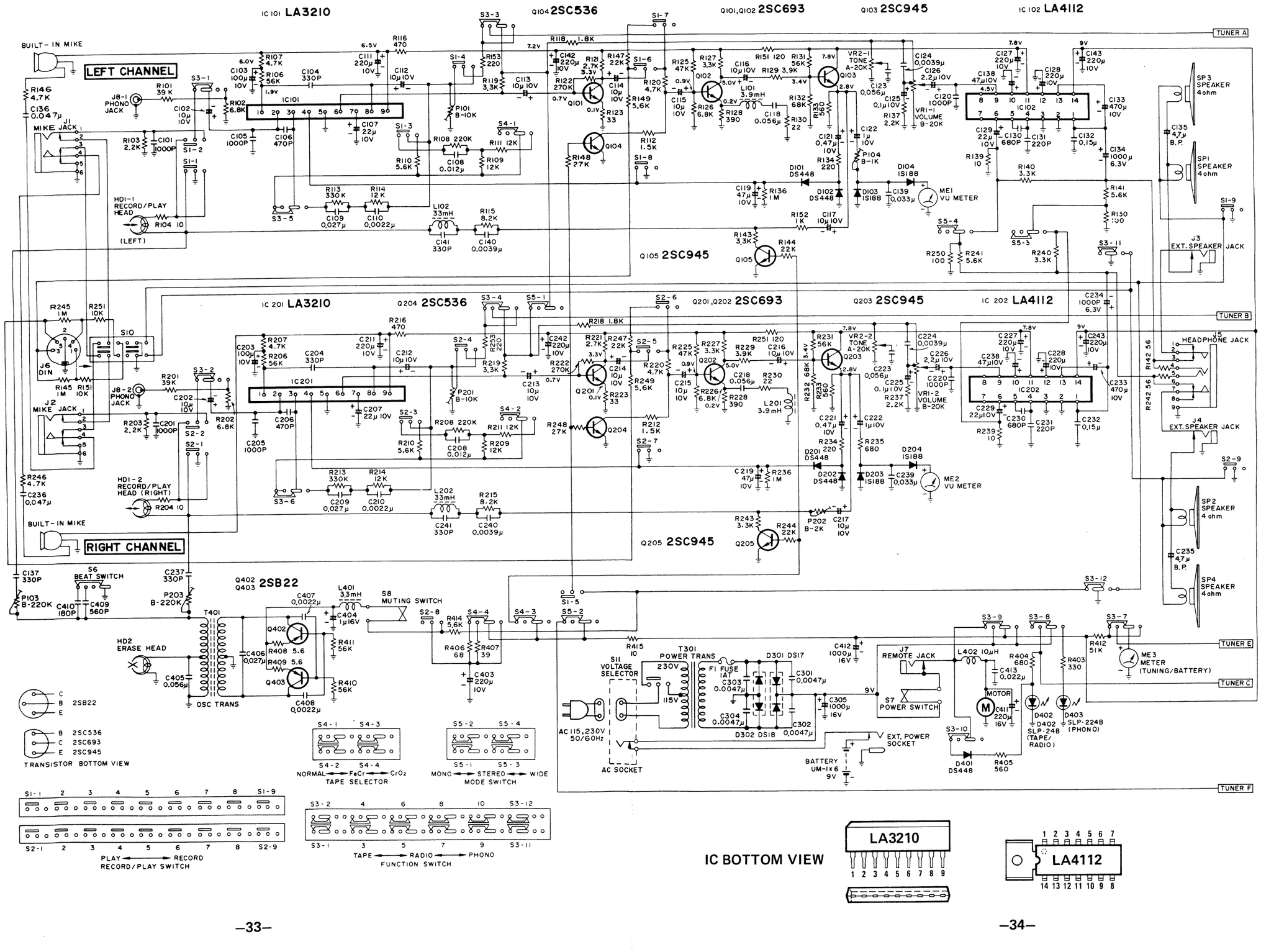
AMPLIFIER & TUNER P.C.BOARD(Top View)



AMPLIFIER P.C.BOARD (Bottom View)



SCHEMATIC DIAGRAM(Audio)



WIRING DIAGRAM